

COMMUNITY FOOD MARKET ATTRACTS ATTENTION

HOUSED under one roof, the new Community Market at 3500 High St., Columbus, Ohio, affords housewives in this section an opportunity to make all of their food purchases in one building. The grocery, meat market, delicatessen, bakery, ice cream parlor, candy shop, etc., are all operating in this community enterprise.

The building is 85x100 feet and is modern in every respect. A special air circulating system for ventilating the market place during the winter months and cooling during the summer months has been installed.

Refrigeration requirements of the market were handled by Kelvinator-Columbus, Inc., under the direction of A. A. Miller, assistant general manager. Three large commercial compressors set up in the basement cool 40 feet of display case in the market section, along with two meat coolers, both of which are 7'7" x 9'6". A 20-foot delicatessen is also cooled by the Kelvinators.



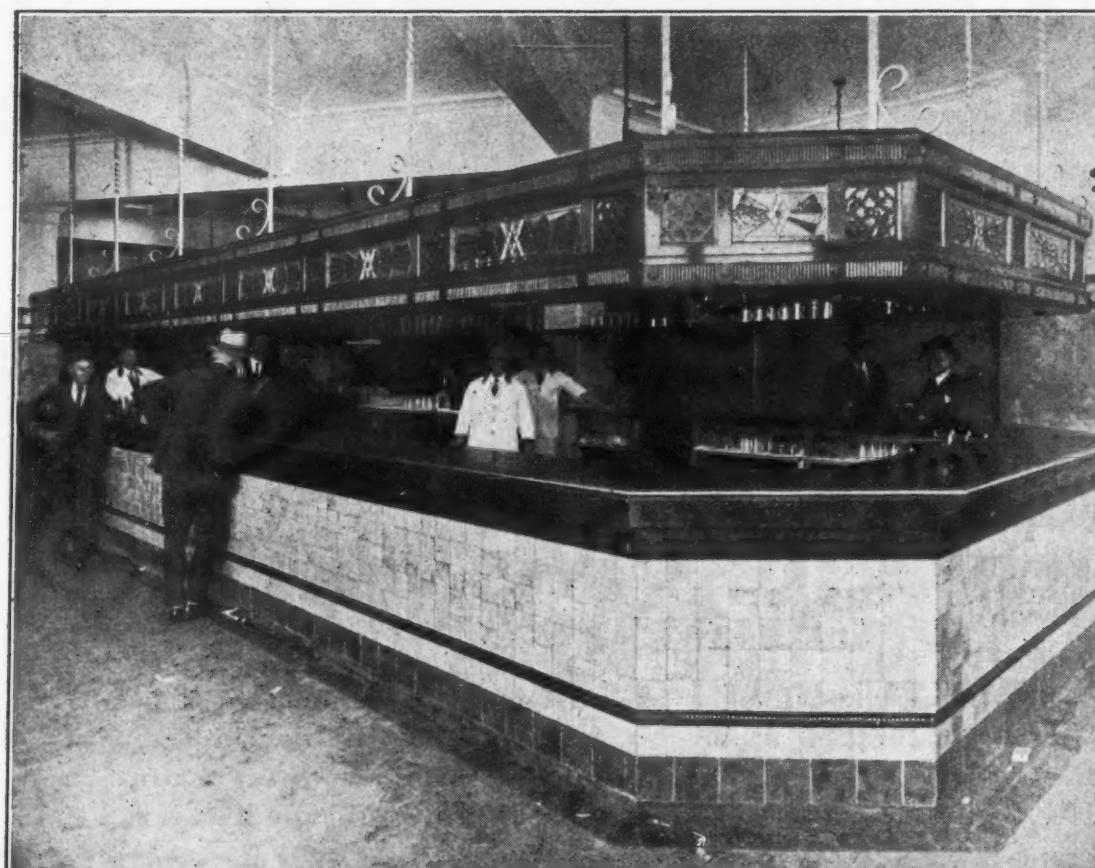
In the new complete food market opened in Columbus, the grocery, delicatessen, meat market, bakery, and confectionery, all operate under the same roof. Housewives shopping at this food market can even purchase ice cream, along with other food supplies. Refrigeration, besides protecting the perishable products sold here, will be used during the summer months to cool the market place.

ELectric refrigeration has the job of keeping the beer served at the Court House Hotel at refreshing temperatures. Kelvinator equipment has been installed by Dan-gar, Geyde & Co., Ltd., distributor for Sydney, Australia.

Two condensing units, which provide the cooling, are so arranged that in the event of a break-down, either unit can carry all or a portion of the load.

One of the machines, a Model WR40, water cooled unit, is hooked up to 8 draught beer coolers in the public bar, and 3 draught beer coolers in the ground floor bar.

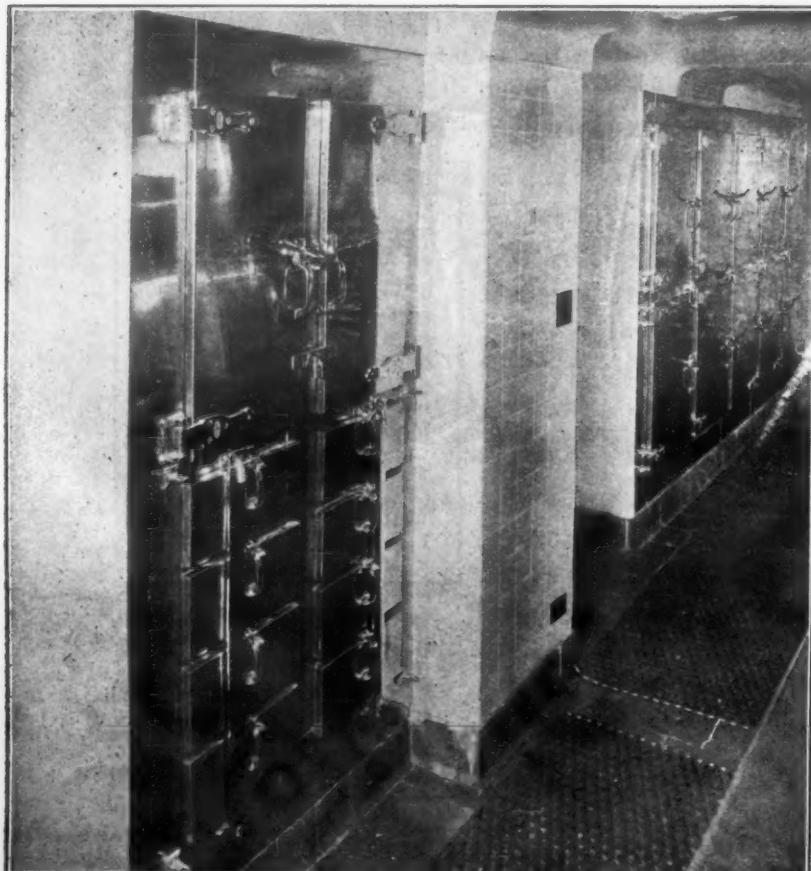
The other condensing unit, a Model WR20, cools a 6 ft. bottle cabinet with a 4782 cross fin, non-ice making evaporator, and one 8 ft. bottle cabinet, with three evaporators for making 90 cubes or 12 lbs. of ice per freezing, both of which are in the ground floor bar. Two other small bottle cabinets are also connected to this unit.



The Court House Hotel in Sydney, Australia, uses Kelvinator equipment for cooling the beer and wines served at its two public bars. The two condensing units are arranged so that either machine can carry all or a portion of the load.



One of the small, refrigerated bottle cabinets in the Court House Hotel installation is on duty in the bottle department. It is one of a number of bottle cabinets which were installed by the Sydney refrigeration company.



"Dry-Kold" refrigerators in the main kitchen of the Merchandise Mart Restaurant, Chicago, all have exteriors of Monel metal.



This Japanese candy store utilizes a refrigerated display case and an ice cream cabinet for keeping its perishable products. Fruit, milk and other foodstuffs are stored in the specially constructed case. The sign on the wall, directly over the cabinet, reads, "special ice cream."

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

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N.E.L.A. TO LAUNCH DRIVE FOR SALE OF MILLION UNITS

Initial Step of Three-Year
Refrigeration Program
Starts in March

New York City—Organization of Electric Refrigeration Bureaus in towns, cities and communities in the United States and Canada will comprise the major month-of-March activities in the co-operative endeavor to sell 1,000,000 electric refrigerators during 1931 as the first step in a three-year program.

The National Electric Light Association, sponsor of the co-operative movement to increase refrigeration sales, has placed the recently established Electric Refrigeration Bureau, with headquarters at 420 Lexington Ave., New York City, in charge of the movement. Regional and state directors have been appointed in all territories and to them the task of organizing local bureaus falls.

The complete details of the campaign are presented in the Plan Book which made its appearance on Feb. 11.

Officially the 1931 campaign will get under way March 26, at which time a double-page advertisement will appear in the *Saturday Evening Post*. This will be the first of sixteen national advertisements which have been scheduled to appear in two magazines throughout the year.

Local bureaus, according to the campaign plans, will also get into action at this time with newspaper advertising tying in closely with the *Post* announcement. Refrigeration exhibits paving the way for the spring campaign will also be held in cities and towns for a week or longer periods.

During the year, three special periods of intensive sales and advertising effort will mark the campaign.

The Spring Jubilee, April 1 to June 30, calls for six days of concentrated selling effort during this period. Eight advertisements appearing in the *Saturday Evening Post* and the *Good Housekeeping Magazine* during this period will stress the convenience and economy

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GEORGIA DEALERS EXEMPT FROM CHAIN STORE TAX

Atlanta, Ga.—Dealers in electric refrigerators in Georgia will not be required to pay the chain store tax of \$50 on each store over five in the chain, according to a decision just handed down by the Georgia Supreme Court.

The Supreme Court has held that the act providing for the chain store tax is unconstitutional, and hence null and void, in that the principle of taxing chains of five or more stores without a similar tax on chains of stores of five or under is in violation of the constitutional guarantee of equal protection for everyone in the same classification.

This is the second time in two years that attempts to tax chain stores on the part of the legislature have been voided by the Supreme Court. A tax of \$250 on chain stores, passed in 1927, was also declared unconstitutional.

Straus Bank Now In Control of Zerozone

Chicago—Zerozone Corp., manufacturer of Zerozone electric refrigerators, has gone into the hands of a receiver.

The Straus National Bank and Trust Co. of Chicago is acting as the receiver in equity. Paul G. Evans, of the Straus organization, is the official representative of the receiver in the handling of all business transactions of the Zerozone Corp.

Operating under a United States district court order, the Zerozone Corp. is continuing distribution of its line of electric refrigerators.

No change in the distributing set-up is contemplated, according to C. E. Jernberg, president of the Zerozone Corp., nor has there been any change in the management, other than the addition of Mr. Evans as counsellor.

"We will continue the active merchandising of Zerozone electric refrigeration products here in Chicago and in the other centers where we have strong distributing organization," states Mr. Jernberg. "Although no expansion programs are expected, we will continue to supply our present outlets with complete equipment."

G.E. DISTRIBUTORS TO MEET IN CLEVELAND

Cleveland, Feb. 24—Delegates to the Monitor Top convention of the General Electric refrigeration department are expected to arrive on special trains here tomorrow from New York, Boston, Philadelphia, Atlantic City, Los Angeles, Denver, Kansas City, and other centers, according to Manager P. B. Zimmerman.

Many distributors and "Toppers" will motor to Cleveland, while some will come by plane to be in time for the opening session Thursday. Reception committees will be on hand at Cleveland hotels, railroad stations, and flying fields.

Regular meetings will be held in Public auditorium. The Toppers' parade, feature of the opening day of the convention, will be held shortly before noon, when the crack salesmen march with "shoulder canes" from the auditorium to Hotel Cleveland for a luncheon.

Later in the day at Public hall a troupe of players will enact a series of

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KELVINATOR PREPARES NEW PROMOTION PLANS

Detroit—Sales promotion plans of the Kelvinator Corp. for this year, according to Vance C. Woodcox, sales promotion manager, call for a comprehensive program, with campaigns reaching every section of the market.

As the first step in this concerted plan the Kelvinator sales promotion department has prepared a special market development activity, "Prospecting in Your Kelvinator Market."

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Coin-Operated Domestic Machine To Be Marketed by Chicago Firm

By John T. Schaefer

Chicago—Coin-operated domestic electric refrigerators which can be placed in homes for only the installation cost, and with which the user pays for his refrigeration by inserting quarters in the coin mechanism, have been placed on the market by the Automatic Refrigerator Corp. of Chicago.

About three years ago J. K. Butler, president, and R. J. Sherman, secretary-treasurer of this organization, began surveys and experiments with coin-operated machines for the home.

Their studies led them to believe an electric refrigerator would be the best machine. The development of two sizes of domestic electric refrigerators and the organization of the Automatic Refrigerator Corp. are the results of their activities.

The two units comprising the Automatic line are model "A" which has 4.3 cu. ft. of food storage space, and model "B" which is a 5.35 cu. ft. cabinet. With the exception of the coin mechanism, the

refrigerators are manufactured with standard parts.

These refrigerators are designed to provide electric refrigeration for the person who doesn't wish to invest in an electric refrigerator of his own.

Mr. Sherman reports considerable interest from ice users who think they cannot afford to buy electric refrigerators and apartment house owners who want to give tenants modern refrigeration without investing in complete systems.

The coin mechanism, located just behind the lower front panel, is operated by a small "Telechron" movement electric motor. The small unit accommodates as many as nine 25-cent pieces at a time, each quarter affording 40 hours of refrigeration, so that 15 days of service is assured by filling the machine with money. The larger type "B" unit is usually set to give 30 hours of refrigeration for a quarter. Patents pending are expected to provide basic protection.

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GRIGSBY-GRUNOW MAY TAKE OVER MAJESTIC CORP.

Conditional Purchase Approved by Directors; Convertible Bonds Offered

Chicago—Directors of the Grigsby-Grunow Co. have approved the conditional purchase of the Majestic Household Utilities Corp. on the basis of a stock exchange of share for share.

This purchase was approved on the condition that \$5,000,000 of six per cent first mortgage gold bonds be subscribed for within a reasonable length of time.

These bonds are secured by the fixed assets of the combined companies, which have a net book value of \$15,899,429, according to President B. J. Grigsby.

Creditors of the Majestic Household Utilities Corp., all suppliers of materials, are expected to underwrite \$2,000,000 of the bond issue.

Officials expect another million to be taken by the 40 Majestic distributors, and the remaining \$2,000,000 will be offered, first to Grigsby-Grunow stockholders, and then to the general public.

After one year these bonds will be convertible into Grigsby-Grunow common stock on the basis of 12 shares for each \$100 bond. In the following year the exchange ratio will be 10 to 1, and the scale proceeds downward annually to a 5 to 1 ratio five years from date of

(Concluded on Page 2, Column 2)

ABSORPTION SYSTEMS DISCUSSED BY A.S.R.E.

Detroit—Absorption machines, both commercial and domestic, were discussed in the last meeting of the Detroit section of the American Society of Refrigerating Engineers Monday night, February 16, in Webster Hall.

R. C. Doremus, engineer with Geo. B. Bright Laboratories and the Detroit Ice Machine Co., covered the subject of commercial absorption machines, and F. E. Sellman, vice-president in charge of sales of the Electrolux Corp., spoke on the domestic machine.

Mr. Doremus began by showing slides and explaining the various types of condensers used, the atmospheric ammonia type, the atmospheric bleeder or drip type, submerged condensers, and several using the counter-flow design in which the cooling water travels toward the top as the gas moves to the bottom.

He then moved to a discussion of the multi-tube seven-pass condenser, in which baffles cause the water to pass seven times across the gas tubes. This

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LIQUID COOLER SALES REACH HIGH RECORD

Detroit—The Liquid Cooler Corp. reports sales of Temprite coolers for January, 1931, to be nearly three times the volume for the same month last year.

President H. C. Kellogg, in his report to stockholders at their annual meeting, predicted a marked increase in sales for 1931.

"There are two major reasons why the Liquid Cooler Corp. can expect to receive a much larger volume of sales in 1931 than in 1930," Mr. Kellogg said.

"The first reason is that the first year was spent in establishing contacts with refrigeration distributors and manufacturers, thus laying the groundwork for future sales. Second, the corporation has designed units specially suited to the needs of soda fountain and beverage manufacturers, from which class of prospects we are finding marked interest."

NEW WALDORF-ASTORIA FRIGIDAIRE EQUIPPED

New York City—Tower apartment suites in the new Waldorf-Astoria Hotel, containing from two to nine rooms, will be equipped with Frigidaire household model electric refrigerators, according to Lucius Boomer, manager of the new \$40,000,000 hotel.

J. F. Carney, engineer for the new Waldorf-Astoria, approved the purchase.

Receivers Revise Absopure Co. Personnel

Detroit—Complete reorganization of the Absopure Refrigeration Corp., together with the proposal of a contemplated aggressive sales campaign to be launched in the spring, has been announced by W. J. Carlyle, president of the Absopure organization.

J. H. Nugent is now treasurer of Absopure, Thomas Moore, secretary, and Nathan Gross, legal advisor. Factory superintendent Pendergast, alone of the former executive staff, has been retained. Hiram Browne, former general manager, is now in New York City.

Messrs. Carlyle and Gross are co-receivers for the General Necessities Corp., which owns the capital stock of the Absopure Refrigeration Corp.

"We're going to keep Absopure in the running," says Mr. Carlyle. "The fact that the parent corporation is on the rocks financially will not prevent us from going ahead with plans to manufacture and sell Absopure electric refrigerators on a bigger scale than before."

"Although plans aren't completed yet, we expect to make an important announcement to the trade in the near future. In the meantime, the Absopure line will continue to be sold through its regular channels."

SANITARY TO MAKE ELECTRIC MACHINE

Fond du Lac, Wis.—The Sanitary Mfg. Co., for many years a manufacturer of refrigerator cabinets, has started production of a five cu. ft. electric refrigerator.

The Sanitary electric refrigerator, as the new model is known, is of all steel construction, with Celotex insulation. The food chamber is finished in white enamel, with the exterior of white synthetic porcelain.

Tinmed rod shelves in the food compartment are set at convenient heights, while the lower shelf is cut out to make room for tall bottles.

This model is equipped with a reciprocating type condensing unit installed in the base compartment. The unit, which uses sulphur dioxide as refrigerant, is equipped with a standard 1/6 h. p. motor.

Temperature control allows for five freezing speeds in the cooling chamber, and the defrosting switch is conveniently located. Two aluminum freezing trays have capacities for twenty cubes at a freezing.

N. A. P. R. E. CONFERENCE DRAWS 150 ENGINEERS

By Elston Herron

Urbana, Ill.—Research work in refrigeration being conducted at the University of Illinois was described by members of the department of mechanical engineering to 150 members of the National Association of Practical Refrigerating Engineers in their state convention here February 20 and 21.

Dean Milo Ketchum of the College of Engineering welcomed the delegates. It

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Packless Valve With Monel Disc Seal is Announced by Kerotest

By John T. Schaefer

Pittsburgh—Multiple diaphragm packless valves, with no soldered joints and including the back seating principle of operation, have just been announced by the Kerotest Manufacturing Co.

The multiple diaphragm valve is the design of W. H. Sweitzer, Kerotest's chief draftsman; J. S. Forbes, treasurer, and their several associates in the engineering department. Patent has been applied for.

Instead of the conventional asbestos rubber packing or metal bellows, the new valve utilizes two flanged Monel metal discs, .006 in. thick and 1 1/8 in. in diameter, to seal the valve stem.

When the valve is opened, the Monel discs flex up by the upward action of a chromium-plated spring around the stem. At the same time metal-to-metal backseating is accomplished in the valve chamber, confining the refrigerant to the pipe line.

When the valve is screwed to the "off" position, the refrigerant is confined in

WAYNE CO. SELLS REFRIGERATION DIVISION TO APEX

Wayne Refrigerator Factory Taken Over; Dealers To Be Retained

Cleveland—The Apex Electrical Manufacturing Co. has purchased the entire electrical refrigeration business of the Wayne Home Equipment Company of Fort Wayne, Indiana, according to C. G. Frantz, president of the Apex Co.

Early last September it was announced that Apex would enter the electric refrigeration field, creating a new division to handle the business.

Recent developments, however, of a new line of washers, ironers and cleaners has taxed the production capacity of the six Apex factories in Cleveland and the Oakland, California, plant to such an extent that it was deemed advisable to purchase the Wayne refrigerator business outright, and to continue production in the present four-story plant in Fort Wayne.

The Fort Wayne concern entered the electric refrigeration field seven years ago.

According to C. G. Frantz, there will be no interruption in service to Wayne dealers. The entire dealer organization of the Fort Wayne company will remain intact, and will continue to be supplied with refrigerators built at the Fort Wayne plant. Production, however, will be materially increased in order also to supply the Apex sales outlets.

For a time both Apex and Wayne electric refrigerators will be produced in the Fort Wayne plant and marketed by the Apex organization.

Whether the Wayne line will be incorporated entirely in the Apex group of appliances is a matter to be determined later, according to C. S. Gregg, advertising manager of the Apex Rotarex Corp.

R. J. Strittmatter, vice-president in charge of sales for Apex cleaners, washers, and ironers, will also direct the sales of Apex and Wayne electric refrigerators. The production staff at the Fort Wayne plant remains intact.

NEW STARR FREEZE LINE DISPLAYED AT CONFERENCE

Richmond, Ind.—Four models comprising the 1931 Starr Freeze line of electric refrigerators were presented to branch managers, field representatives, and a number of dealers, who attended a sales meeting held here, Feb. 13-14, by the Starr Co.

Sales and advertising plans for the year were discussed at the two-day conference. Harry Gennett, president of the company; Fred Gennett, secretary; H. J. Wiggins, sales manager, and other members of the organization, addressed the delegates.

Quick-freezing of fruits and meats was discussed by several representatives of large packing companies. The Starr men were also given the opportunity to witness a special demonstration of

(Concluded on Page 2, Column 4)

the valve by the discs which seat against the valve body in this position; and at the same time their flanges are clamped between the body and the cap nut.

The laminated Monel disc seals are expected to stand considerable use before wearing out, Mr. Forbes said, and pointed out that when renewal is necessary it can be done without shutting down the refrigerating system. The discs can be mailed to any service man, who merely unscrews the cap nut and handwheel, and replaces the old discs with new ones. Neither special wrenches or soldering will be necessary, he showed.

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KELVINATOR ANNOUNCES NEW PROMOTION PLANS

(Concluded from Page 1, Column 2)

This "Prospecting" plan, which is presented in a special Kelvinator manual section, outlines for the dealer or distributor the best methods to locate prospects and accurately record them for systematic follow-up.

The manual contains useful information on building prospect lists. It tells how the dealer or distributor can select with accuracy and efficiency the names he wishes to reach in each market group.

As part of this activity, the dealer or distributor lists his prospects in each market division, and mails his list forms to the factory in Detroit. The name and address of each prospect is then transferred in duplicate to special prospect file cards. The cards are then returned to the dealer to serve as an office record.

Two direct mail pieces, which contain full details of the plan, announce that a "Success Campaign" to be conducted in the domestic field will start very shortly. This campaign will comprise the spring sales program for dealers and distributors.

Grigsby-Grunow Plans Merger

(Concluded from Page 1, Column 3)

issuance. The bonds will be put on sale immediately at 97½.

The proposed merger and refinancing will result in combined net current assets of close to \$9,000,000, according to President Grigsby, although the total net assets would represent approximately five times the par value.

"Majestic Household Utilities Corp. is solvent, but not in a liquid condition," states Mr. Grigsby. "A great portion of the corporation's capital was invested in fixed assets."

The economies in operation which will result from a closer working arrangement between the two companies will have a material benefit, inasmuch as both the sales and production seasons are diametrically opposed."

FOULDS PROMOTED

Seneca Falls, N. Y.—H. W. Foulds, formerly vice-president of Servel, Inc., has recently been appointed sales manager of Goulds Pumps, Inc. Previous to this appointment he was assistant to the president of the Gould organization.

Million Unit Campaign To Get Under Way Next Month

(Concluded from Page 1, Column 1)

appeal of electric refrigeration. Local advertising will also assist the sales campaign of the dealers, distributors and central stations.

The Fall Sales Drive, Sept. 7 to Oct. 16, will feature Electric Refrigeration Week, Sept. 7 to 14, which will be widely advertised, both nationally and locally. Special exhibits or shows by the dealers and distributors are also scheduled to be held during the Refrigeration Week.

Following closely on the heels of the Fall Drive will be the Holiday Sales Fest, emphasizing the need for proper winter refrigeration and the Christmas gift appeal.

Four electric refrigerator manufacturers, Frigidaire Corp., Dayton, Ohio; General Electric Co., Cleveland; Kelvinator Corp., Detroit, and Westinghouse Elec. & Mfg. Co., Mansfield, Ohio, have contributed funds for the national advertising to be carried on by the Electric Refrigeration Bureau during 1931 and the ensuing two years.

Local Advertising Budget

Funds for local joint advertising and sales promotion will be subscribed by dealers, distributors and central stations. As the sales program contemplates selling electric refrigerators to 5 per cent of all domestic customers, the national committee has suggested that the contribution of central stations average about 10 cents per meter for each customer in the territory.

"Invest in an Electric Refrigerator" is the slogan which has been adopted for the sales activity. This slogan, which has been incorporated in a striking design, will appear in all advertising and sales promotion materials used by the Bureau and the participating manufacturers.

Newspaper advertising mats, outdoor posters, electrical transcriptions for radio broadcasts, and movie slides will be supplied to local bureaus by the New York office at cost.

Sales promotion material for individual use by dealers and distributors in the movement consists of: window stickers, truck banners, tire covers (one size for small cars and another for large cars), envelope stuffers and window and counter display signs. This material will also be supplied at low cost.

Heading the executive committee of the Electric Refrigeration Bureau is National Chairman, J. E. Davidson, of the Nebraska Power Co., Omaha, Neb.

Assisting Mr. Davidson are: H. C. Cummins, Byllesby Engineering & Management Corp., Chicago; D. M. DeBard, Stone & Webster Service Corp., Boston; C. J. Eaton, Middle West Utilities Co., Chicago; T. F. Kennedy, Henry L. Doherty & Co., New York; C. E. Michel, Union Electric Light & Power Co., St. Louis; L. R. Parker, The Commonwealth & Southern Corp., Jackson, Mich.; F. D. Pemberton, Public Service Electric & Gas Co., Newark, N. J.; W. R. Putnam, Electric Bond & Share Co., New York; H. M. Sawyer, American Gas & Electric Co., New York; Dorsey R.

Smith, Consolidated Gas, Electric Light & Power Co., Baltimore; A. E. Ward, Associated Gas & Electric System, New York; and A. C. Watt, Commonwealth & Southern Corp., New York.

Manufacturers' representatives are: H. W. Burritt, Kelvinator Corp.; J. A. Harlan, Frigidaire Corp.; P. B. Zimmerman, General Electric Co.; and Carl D. Taylor, Westinghouse Elec. & Mfg. Co.

Members-at-large are: P. S. Clapp, managing director, National Electric Light Association, New York; C. E. Greenwood, commercial director, National Electric Light Association, New York; T. O. Kennedy, chairman, National Electric Light Association, National Commercial Section, Ohio Public Service Co., Cleveland.

Regional directors under whose guidance the local bureaus will be organized are: H. P. Liversidge, eastern division, Philadelphia Electric Co., Philadelphia; L. B. Herrington, east central division, Kentucky Utilities Co., Louisville, Ky.;

John F. Gilchrist, Great Lakes division, Commonwealth Edison Co., Chicago; L. O. Ripley, middle west division, Kansas Gas & Electric Co., Wichita, Kan.; C. L. Edgar, New England division, The Edison Illuminating Co. of Boston; W. H. Burke, north central division, Minnesota Power & Light Co., Duluth; G. M. Gadsby, northwest division, Utah Power & Light Co., Salt Lake City; A. Emory Wishon, Pacific Coast Division, Pacific Gas & Electric Co., San Francisco; Arthur Prager, Rocky Mountain division, Albuquerque Gas & Electric Co., Albuquerque, N. M.; J. G. Holtzclaw, south-central division, Virginia Electric & Power Co., Richmond, Va.; J. F. Owens, southwest division, Oklahoma Gas & Electric Co., Oklahoma City, Okla.; J. K. Wilson, Canadian division, Shawinigan Water & Power Co., Montreal, Can.

INVEST IN AN ELECTRIC REFRIGERATOR

The Campaign Slogan

John F. Gilchrist, Great Lakes division, Commonwealth Edison Co., Chicago; L. O. Ripley, middle west division, Kansas Gas & Electric Co., Wichita, Kan.; C. L. Edgar, New England division, The Edison Illuminating Co. of Boston; W. H. Burke, north central division, Minnesota Power & Light Co., Duluth; G. M. Gadsby, northwest division, Utah Power & Light Co., Salt Lake City; A. Emory Wishon, Pacific Coast Division, Pacific Gas & Electric Co., San Francisco; Arthur Prager, Rocky Mountain division, Albuquerque Gas & Electric Co., Albuquerque, N. M.; J. G. Holtzclaw, south-central division, Virginia Electric & Power Co., Richmond, Va.; J. F. Owens, southwest division, Oklahoma Gas & Electric Co., Oklahoma City, Okla.; J. K. Wilson, Canadian division, Shawinigan Water & Power Co., Montreal, Can.

SELLMAN, DOREMUS SPEAK ON ABSORPTION SYSTEM

(Concluded from Page 1, Column 3)

condenser gives slightly better heat transmission than the others, he said.

Several slides were shown, in which Mr. Doremus explained the operation of the system, and the construction and operation of each element in a commercial installation, the generator, rectifier, separator, condenser, receiver, weak liquid cooler, brine cooler, absorber, ammonia pumps, exchanger, and regulator. There is a valve between every two pieces of equipment, he said.

The two requirements for industrial use of absorption systems are a good supply of condensing water, and either low priced coal or a supply of low pressure exhaust steam.

When an industrial absorption machine loses capacity, Mr. Doremus said, it can usually be traced to one of the following faults: insufficient water, warm condensing water, insufficient flow of brine, insufficient ammonia, air in the system, the rectifier is too cool, the cooler needs purging, or a leak in the exchanger.

H. H. Kennedy, regional manager for the central district, was in charge of the convention sessions.

Other speakers on the program were: J. T. Bray, assistant manager in charge of the wholesale division; L. D. Kimball, manager of sales promotion, A. G. Letherby, assistant to Mr. Kimball; W. H. Mendham, in charge of advertising; L. R. Gault, manager of the commercial and engineering division; W. C. Yates, commercial engineer, and G. E. Hutton, manager of installation and service division, all from the central district headquarters.

Several officials from the factory at Dayton, also addressed the gathering.

The first day's conference was open to both dealers and salesmen, while the Saturday sessions were limited to dealers only. Frigidaire was host at a banquet Friday evening in the Book-Cadillac.

STARR COMPANY SHOWS NEW LINE AT MEETING

(Concluded from Page 1, Column 5)

frozen meats put on at the Richmond-Leland Hotel.

Part of the convention period was given over to an inspection tour of the factory, at which time the visitors viewed the production of cooling units, compressors and cabinets in the large plant.

Comprising the Starr Freeze line are four self-contained models with food storage capacities ranging from 5 to 8 cu. ft. High legs are standard with all models.

Spring hinged door leading to the freezing compartment, temperature control with 5 to 8 freezing speeds, and chromium plated hardware are also features of the new models.

N. A. P. R. E. CONFERENCE DRAWS 150 ENGINEERS

(Concluded from Page 1, Column 4)

was decided to hold the 1932 national convention in Houston, Tex., in their business meeting.

Friday morning's session was devoted to the reading of a paper on "Personal Tests on Volumetric Efficiency of Compressors" by J. C. Reed and E. E. Ambrosius of the department of mechanical engineering who won the first prize with it at the New York meeting of the A. S. R. E.

T. J. Kimball, chief engineer of the Bowman Dairy Co., Chicago, was also on the program, with a talk on "Cooling of Milk" as applied in the Bowman plant.

The afternoon was spent inspecting the laboratories in the mechanical, electrical, chemistry and materials testing departments, and the dairy and experimental ice plant.

Prof. J. S. Crandell of the civil engineering department addressed the evening banquet, maintaining that research work has been the basis for the technical progress during the past 25 years.

A. J. Authenrieth, vice-president of the Middle-West Utilities Co. of Chicago, acted as chairman and toastmaster at the banquet. Prof. D. B. Keyes of the chemistry department exhibited several lantern slides and described recent inventions.

Saturday morning's session consisted of lectures by Prof. Dana Burks, who is doing research in the experimental ice plant. R. W. Waterfill of the Carrier Corp. gave a talk on "Air Conditioning" which had been prepared by W. H. Carrier, former president of the A. S. R. E.

Harry Sloan, advisory engineer for the Vilter Manufacturing Co., Milwaukee, spoke on "Quick Freezing of Commodities." Prof. H. J. MacIntire of the department of mechanical engineering, had charge of the program arrangements.

SELLMAN, DOREMUS SPEAK ON ABSORPTION SYSTEM

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condenser gives slightly better heat transmission than the others, he said.

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After his talk, a number of questions were raised by the audience, one of them being on steam consumption. Mr. Doremus said 30 lbs. of steam at 15 lbs. pressure will make about one ton of ice.

Mr. Sellman began by tracing the development of the gas refrigerator in this country. The full text of his address is printed on page 18 of this issue. As early as 1913 there were gas-fired units in domestic use here, he said, most of the early pioneering being done along the Atlantic seaboard.

In 1925 his company, Electrolux, procured the right under the Platen-Munters patents to manufacture their present refrigerator, and in 1927 actual marketing began. Last year they entered the commercial field, he expects gas refrigeration to invade the commercial field in a large measure.

Several other fuels are being used in machines, according to Mr. Sellman. Approximately 135,000 Electrolux refrigerators in this country are now operating on manufactured gas, natural gas, and bottled compressed gas. Several thousand are also operating on electricity, especially in Canada, he said.

The same elementary actions take place in the Electrolux as in the commercial machines just described by Mr. Doremus, he explained. In his machine there are three distinct cycles, water, hydrogen, and ammonia.

Complete line production has been established at the Electrolux factory in Evansville, he said, the capacity now being 600 units a day.

HILL DIRECTING NEW CLEVELAND BRANCH

Cleveland—E. C. Hill has been appointed manager of the Cleveland branch of Frigidaire Sales Corp., formerly William F. Gray, Inc., but recently taken over by Frigidaire.

BOHN PIONEERED THE PORCELAIN REFRIGERATOR

This is but one of the many advances pioneered by the Bohn engineers during thirty-five years of quality manufacturing.

Bohn has built thousands of cabinets for manufacturers of refrigerating machines who desired the utmost in beautiful and scientific construction to best set forth their mechanism.

Bohn would be glad to figure with those organizations who recognize that a quality all-porcelain refrigerator is a distinct merchandising asset.

**BOHN REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA**

Write for details of low prices now prevailing on stock models.

• STANDARD REFRIGERATING APPLIANCES •

For more than Five years a supplier of standard devices to the refrigerating machine industry

AIR-WAY
CONDENSERS
DEHYDRATORS
DESSERT PANS
COMMERCIAL
EVAPORATORS
DOMESTIC
DRY COILS
DOMESTIC
EVAPORATORS
EXPANSION
VALVES
ICE TRAYS
LIQUID
FILTERS
SCREENS

The New and Improved 1931 Appliances of Fedders Manufacturing Company have been designed by an organization of competent engineers, with long practical experience in the refrigerating machine field.

Today, Fedders Quality meets the most exacting requirements of manufacturer and engineer. The finished product, in which you are so vitally interested, is under the supervision of a Quality Engineer, responsible directly to the Management. Standardize on Fedders Appliances and assure yourself of precision workmanship, high-grade materials, and a time-tested product.

Eliminate unnecessary expenditures for equipment, and take advantage of the research, engineering and production equipment which is at your command.

Your inquiries are invited, and we pledge the resources of the entire Fedders Organization to your service.

FEDDERS MANUFACTURING CO., Inc.
57 TONAWANDA STREET

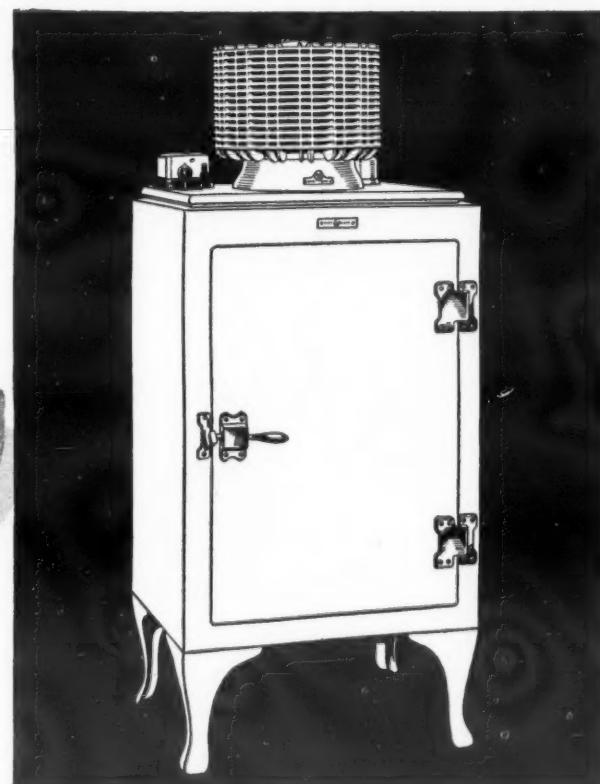
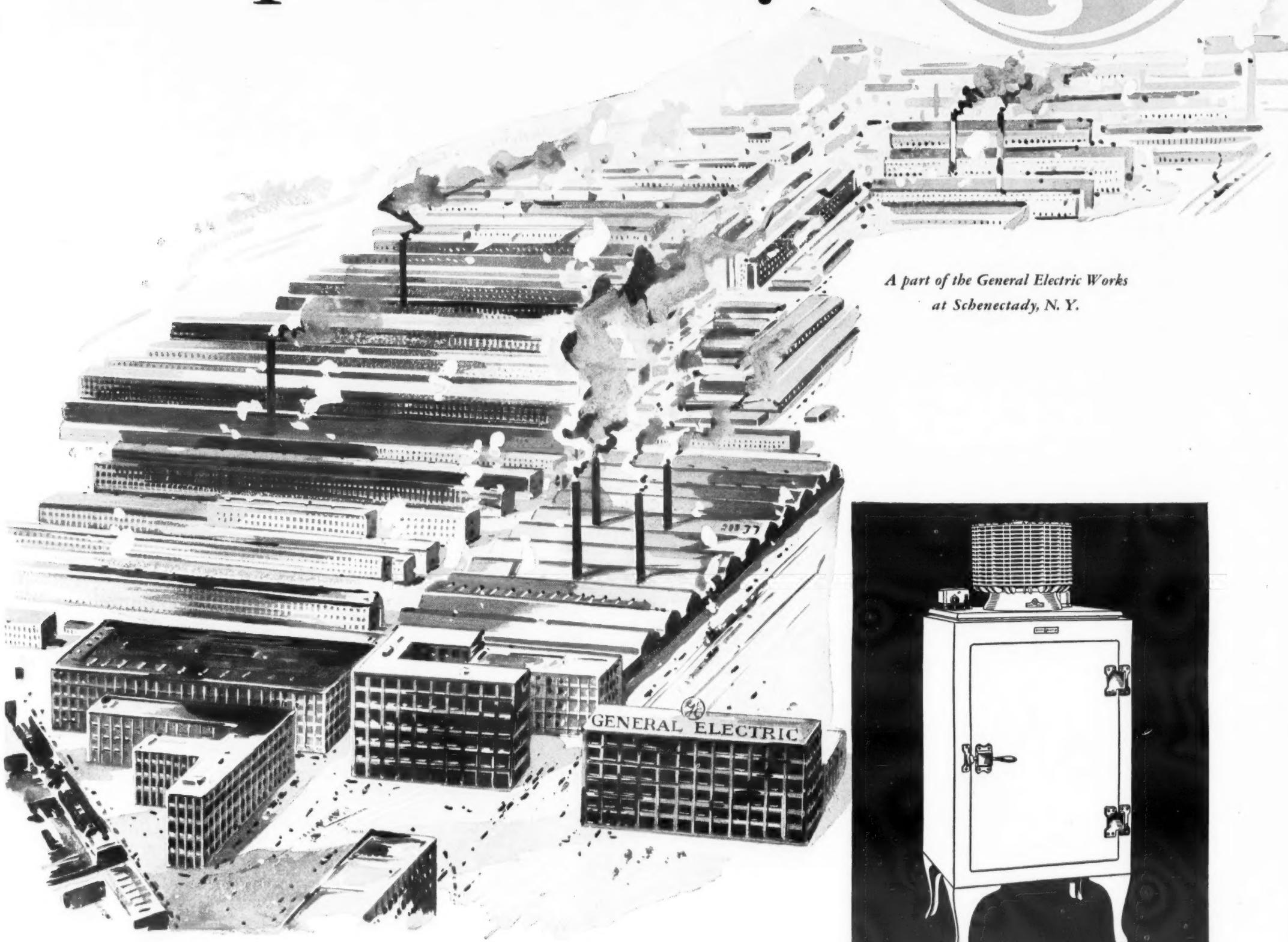
BUFFALO, N. Y.

DETROIT OFFICE:
320 BEAUBIEN ST.

Undivided Responsibility



*A part of the General Electric Works
at Schenectady, N. Y.*



WHEN General Electric engineers hermetically sealed the refrigerating unit of the General Electric Refrigerator in the steel Monitor Top, they definitely accepted full and undivided responsibility for its performance.

But before daring to seal it permanently they made it so simple, efficient and free from need of attention that it could be sold without anticipation of servicing.

General Electric's vast experience in the design and manufacture of electrical equipment had long imbued its engineers with the tradition of dependability. Realizing that family health and large investments in food demanded positive unfailing protection, they gave the public refrigerators that not only maintained but increased the nation's faith in things electrical.

Fifteen years of research preceded the introduction of the first General Electric Refrigerator. More than 19 different types of refrigerators were built and tested. Today, more than 3 years of use in homes and in business has proved what this research promised. Today as three years ago, General Electric responsibility begins—not ends—with the sale of a General Electric Refrigerator.

The original simplicity of the General Electric Refrigerator remains basically unchanged. There are only three main moving parts and these run in a permanent bath of oil—within the sealed steel casing of the Monitor Top. General Electric also developed the All-Steel Cabinet—the greatest improvement made in domestic refrigerator cabinet construction. Precision manufacture almost unbelievably fine and testing methods so exacting as to

occupy 72% of the assembly time, insure uniformly high quality of the product—enable General Electric to assume full responsibility and to relieve your responsibility correspondingly!

The General Electric refrigerators which you deliver stay put—they stay sold—and the profit stays with you. Each sale is a permanent asset, spreading unmixed good will, without piling up future demands on you and your facilities. That's the extra assurance of success designed into General Electric refrigeration through the policy of Undivided Responsibility.

General Electric Company, Electric Refrigeration Department, Section DF22, Hanna Bldg., 1400 Euclid Avenue, Cleveland, Ohio.

Join us in the General Electric Program, broadcast every Saturday evening, on a nation-wide N. B. C. network

GENERAL ELECTRIC ALL-STEEL REFRIGERATOR

DOMESTIC, APARTMENT HOUSE, AND COMMERCIAL REFRIGERATORS • ELECTRIC WATER COOLERS • ELECTRIC MILK COOLERS

CHICAGO CO. TO SELL COIN OPERATED UNITS

(Concluded from Page 1, Column 2)
tection on the electrical circuit of the coin mechanism.

Collectors of the 12 distributors which the Automatic Refrigerator Corp. has appointed throughout the country, visit their customers twice a month to collect the money which has been placed in the coin boxes.

Because of the fact that when refrigerators are rented, considerable capital is needed for their original cost, the company has made arrangements with each of its distributors for them to sell stock at a price of \$25 a share, with the agreement that for each \$225 worth of stock sold, one refrigerator will be installed.

Either the \$3 a month guaranteed by the lessee or the \$4.50 which will be received by a model "A" in constant service should provide ample return for dividends, officials of the company believe.

The type "B" refrigerator, designed for use in large families, boarding houses, and places which are in the habit of paying about \$7 a month for ice, will collect \$6 per month with 30-day usage.

A lessee of this refrigerator agrees to pay a minimum rental of \$4.50 a month for its use, if the sum found by collectors in the coin box does not amount to that.

The company also sells the refrigerators outright when the customer desires, on a payment scheme through which he pays for it by inserting quarters in the machine. Under this plan the mechanism is set to give 24 hours of refrigeration with the small size, or 20 hours with the type "B."

Mr. Sherman said that they have had very little trouble with customers putting slugs in the machines because of the fact that the refrigerators are installed in private homes where some one person is directly responsible for their proper use. For this same reason, he says, there has been very little abuse of the machines.

The cabinets are manufactured by the Illinois Refrigerator Co., and are insulated with three inches of "Dry Zero." The interior is of porcelain, the exterior of enamel. The hardware is chromium plated.

A one-sixth hp. Wagner motor is used to operate the compressor. The Modern Die & Plate Press Mfg. Co. of Belleville, Ill., furnishes the compressor and the

evaporator, which is of the brine tank type. Condensers are furnished by the Flintlock Corp. and the Bush Mfg. Co. Sulphur dioxide is used for a refrig-

erant, with alcohol in the brine tank. A five-position cold control, a porcelain defrosting pan, and a porcelain "Chitray"

are provided.

Metered Refrigeration



A young lady about to pay her refrigeration rent for 15 days in advance in the new coin operated refrigerator which the Automatic Refrigerator Corp. has placed on the market. Each quarter runs the electrically-timed mechanism for 40 hours, at the end of which the refrigerator automatically stops unless a number of 25 cent pieces have been inserted for subsequent use. The timing mechanism is operated by a small "telechron" motor.

Fedders Speeding Production

Buffalo, N. Y.—First-of-the-year business in the refrigeration industry is increasing much faster this year than is the business of the automobile industry, according to W. D. Keefe, sales manager for the Fedders Manufacturing Co. here. Production lines in the Fedders factory are being revised and quickened in a plan which is expected to practically double their present capacity.

Mr. Keefe cites orders to increase daily shipments of evaporators, condensers, and filters to Norge from 150 to 300, effective about March 1; Servel is going to use 250 units daily instead of 75; while Williams Oil-O-Matic and Holbrook, Merrill & Stetson are also increasing their demands. Pacific Coast refrigerator manufacturers, which usually reach their production peak in the latter part of March or early in April, this year are going strong already, he says.

One reason for the quickened pace right now, he believes, is that manufacturers are taking advantage of the low base price of 10 cents a pound for copper, whereas it was 24 cents two years ago.

GENERAL ELECTRIC MEN MEET THURSDAY, FRIDAY

(Concluded from Page 1, Column 2)
short dramatic skits, showing problems of salesmen and possible solutions.

Thursday night the annual banquet will be held in the Rainbow room of Hotel Winton.

Another feature of the two-day meeting will be the showing of the new photophone talking picture, "The Trail Blazer," depicting the struggles and trials of scientists and inventors against the old world of skeptics. The present day need of electric refrigeration also is emphasized in the talkie.

Dr. George A. Allison, who, as a director of the electric refrigeration bureau of the National Electric Light Association, has predicted that 1,000,000 electric refrigerators of all makes will be sold in 1931, is listed as a speaker.

Arrangements are being made for the probable appearance here of Floyd Gibbons, internationally known author, radio announcer and war correspondent.

WILLIAMS REPORTS LOSS FOR LAST YEAR

Bloomington, Ill.—The Williams Oil-O-Matic Heating Corp. reports a net loss of \$321,179 for the fiscal year ending Oct. 31, 1930, after all charges and taxes.

This compares with a net profit of \$4,658, which was equal to 1 cent a share, after all charges and taxes, during the preceding fiscal year.

David Wochner, treasurer of the company, stated that the financial statement showed a ratio of 7.2% current assets to one of liabilities; a ratio of 10.7% of total assets to one of total liabilities and reserves; and a ratio of 22.2% cash, demand loans, and bonds to one of all liabilities.

The annual meeting of the stockholders of the company was held recently at the general offices of the company here.

The following directors were elected: C. U. Williams, chairman; W. W. Williams, David Wochner, R. O. Ahlenius, all of Bloomington, and George Geiger, Sigmund Livingston and Lewis P. Fisher, all of Chicago. Mr. Fisher succeeded Paul D. Skinner, Chicago, and Mr. Ahlenius succeeded W. David Owen, Chicago.

The directors elected C. U. Williams, president; W. W. Williams, vice-president and secretary; David Wochner, treasurer; and R. O. Ahlenius, assistant secretary.

A.S.R.E. PICKS KANSAS CITY FOR SPRING CONVENTION

New York, N. Y.—The spring meeting of the American Society of Refrigerating Engineers will be held at Kansas City, Mo., May 6, 7, and 8, according to an announcement of the main office. No previous meeting of the society has been held at a city so far west; but officials of the organization believe that the importance of the refrigeration industries in the middle-west will make this meeting especially interesting and significant.

Plans are under way for the special transportation of eastern members in a trip which will mean only one night on the road, going through St. Louis on the Pennsylvania Railroad, and from there by the Missouri Pacific.

The members of the A. S. R. E. program committee for 1931 are as follows: R. T. Frazier, Chattanooga; F. R. Zumbro, Waynesboro, Pa.; B. E. Seamon, Chicago; John Wylie, Jr., Detroit; Cyril Leech, Philadelphia; A. J. Ferretti, Boston; George Chamberlain, St. Louis; Crosby Field, New York; and E. M. Dodds, Kansas City, Mo.

BALTIMORE DISTRIBUTORS ANNOUNCED

Baltimore, Md.—Columbia Wholesalers, Inc., 32 South Paca St., has been appointed distributor in this territory for the Norge refrigerator.

The new distributor has been identified with the wholesale phonograph, record and radio industry for a number of years. L. L. Andrews is president of the company.

The Eastern Hardware & Supply Co., 39 South Charles St., is now distributor in this territory for Copeland. The concern is headed by Charles T. Farnen, as president.

MEREDITH TRANSFERRED TO SOUTHERN FIELD

Detroit, Mich.—Charles E. Meredith has been transferred by the Kelvinator Corp. to Jacksonville, Fla., to take over the district manager's post for that territory.

Mr. Meredith was formerly Kelvinator district manager at large. Before joining Kelvinator, he was with the Hol-N-Kold Corp., San Francisco, in charge of its Kelvinator division.

CALIFORNIA MAYFLOWER DISTRIBUTORS WORK FAST

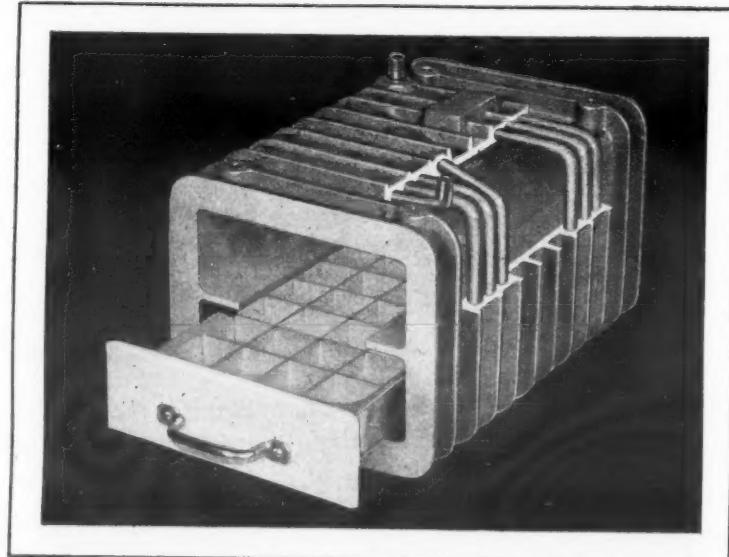
Oakland, Calif.—Less than a week after placing an order for five carloads of Mayflower refrigerators, Kierulff & Ravenscroft, California Trupar distributors, received the entire shipment and had them placed in showrooms, according to W. J. Seroy, Pacific Coast sales manager of the Trupar Manufacturing Co.

The five carloads arrived on Saturday, were unloaded at midnight, and were put on display by Sunday morning.

CLEVELAND ELECTRICAL LEAGUE MOVES

Cleveland—The Electrical League, formerly located in the Midland Bank Building, is now on the eighteenth floor of the Builders Exchange Building, in the heart of Cleveland's New Terminal Development.

Introducing AMERICAN CASTINCOIL DOMESTIC UNITS



INDIVIDUAL UNITS

American Castincoil Domestic Units are made of aluminum cast around copper tubing. Every refrigeration engineer will quickly appreciate the efficiency of this combination of metals, each of which is widely known for high heat transmission. He will also realize that these metals do not permit the manufacture of the cheapest evaporators under normal conditions. However, contemplated volume production makes it possible to quote prices comparable to those quoted on units of lesser efficiency and cheaper construction.



Individual Unit, 2 trays



Individual Unit, 3 trays



This catalog will give you full information about this new product. Write for it today.



Multiple Unit, 2 trays



Multiple Unit, 3 trays

MULTIPLE SYSTEMS

The Castincoil Unit is particularly adaptable to multiple systems. Used with American Thermostatic Expansive Valve it is operated on a dry system requiring the minimum amount of refrigerant, measured in ounces, not pounds. It is positive in action and trouble-proof. It gives the proper hold-over and because of the close contact of the trays with the rapid-heat-absorbing metal, it freezes

ice cubes in the shortest time. Investigate today the most efficient, the most durable, the most scientifically designed evaporator on the market.

INDUSTRIAL DIVISION AMERICAN RADIATOR COMPANY

DIVISION OF
AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
816 So. Michigan Ave., Chicago 40 West 40th Street, New York



**"And our refrigerator is
insulated with Dry-Zero...the
most efficient commercial
insulant known!"**

Thousands of women are phrasing
their pride of possession in this
authoritative statement of quality.

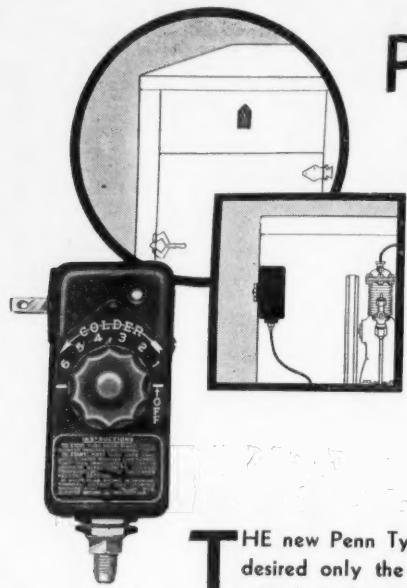
DRY-ZERO CORPORATION, MERCHANDISE MART, CHICAGO, ILLINOIS

Canadian Office — 465 Parliament St., Toronto

DRY-ZERO

THE MOST EFFICIENT COMMERCIAL INSULANT KNOWN

PENN TYPE 'J' UNIT CONTROL



An Automatic Switch
for Electric Refrigera-
tors to meet the latest
Demand for Conven-
ience and Simplicity

THE new Penn Type J Unit Control has been so designed that if desired only the attractive black and white control panel need appear on the outside of the refrigerator. A half turn of the one dial knob starts or stops the unit, gives six colder temperature settings, and resets the motor protective device after it has operated. Thermal overload protection to completely safeguard the motor is included in the Bakelite case, and in addition, convenient adjustments for changing the range also differential. The switch itself is no bigger than an ordinary conduit box, and can be mounted in any position inside or outside the cabinet. See its simplicity. Test its performance. It won't take your engineering department long to discover its merits. And the reliability of this control has already been proven.

PENN ELECTRIC SWITCH CO.
DES MOINES, IOWA

New York
Cincinnati

Detroit
Los Angeles
Seattle

With offices in the following cities:

San Francisco
Barcelona, Spain
Osaka, Japan

London, England
Philadelphia
Lyons, France

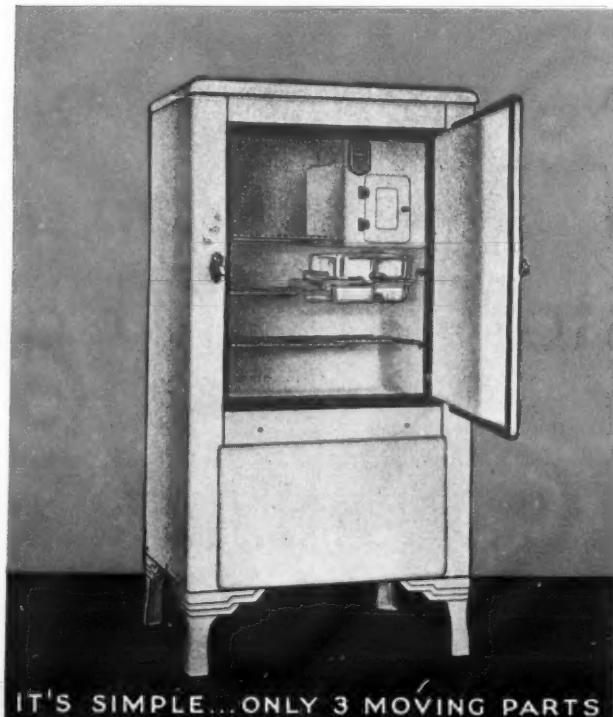
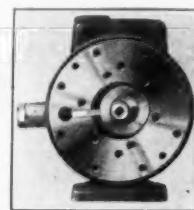
Boston
Chicago

The
**FIRST
BIG YEAR
WITH NORGE**



NORGE Electric Refrigerator has proved itself over a period of six years in world wide use and Norge is now stepping out. Norge stands alone now with a quality product, having more features in favor of the dealer than you'll find in any other major household electric appliance.

1. The Norge is package merchandise. 2. It's a short line—three standard models and two specials. 3. It's a fast turnover line—with small inventory. 4. It's backed by Borg-Warner Corporation. 5. A new merchandising plan is ready with suggestions for successful operation. 6. The plan is complete with everything from a financing set-up to salesmen's Sales Tools. 7. A powerful advertising program backs the Norge Dealer. 8. The Norge has 34 superior consumer features—19 of them original with Norge. 9. Of these features perhaps the most important is the Rollator...Norge's distinctive, perfected mechanism. 10. Norge has superlative quality. 11. Norge, with the everlasting Rollator, is long lived. 12. Norge is low priced. 13. Norge is service free. 14. The chassis is completely replaceable, quickly, simply.



IT'S SIMPLE...ONLY 3 MOVING PARTS
Yes! This is Norge's first BIG year. Norge has proved itself and is ready for deserved leadership. Norge is worth while investigating. A letter now will bring full details, and quick action. Write.
NORGE CORPORATION (Division of Borg-Warner)
658 EAST WOODBRIDGE STREET, DETROIT, MICH.

NORGE
WITH ROLLATOR

Rex Cole Retains Popular Radio Feature



Rex Cole (center) signing contract for daily radio programs by the Mountaineers.

New York City—The Rex Cole Mountaineers, native southern hillbilly musicians, who have been entertaining radio listeners over WEAF daily during the last year, signed a contract, Feb. 16, calling for a continuance of their pro-

grams during the ensuing year which will pay them \$175,000.

The contract was signed at an informal reception in the offices of Rex Cole, Inc., General Electric distributor, at Fourth Avenue and 21st Street, New York City. Mr. Cole signed the contract and Merlin H. Aylesworth, president, National Broadcasting Co., Inc., accepted it on behalf of the entertainers.

The Mountaineers themselves were present and played some of the old mountain ballads which have appealed to millions of listeners. Their fan mail is said to average 1,000 requests for special songs each week.

The instruments they use are reminiscent of their hillbilly background, the fiddle, bass jug, jewsharp, harmonica, and a peculiarly shaped little melody producer which is called the "sweet potato" by its owner, Eddie Stokes.

Members of the Mountaineers, whose melodies are well known to their radio followers, are Tom Emerson, who plays the bull fiddle; Eddie Younger, director; Long Tom, of Tennessee, who sings the ballads; Al McCoy, guitar; Eddie Stokes, who plays the violin, jewsharp, harmonica and sweet potato; Gus Stokes, who plays the bass jug; Leo Hartman, cornetist; and Charley Briggs, accordionist.

Bridgeport Dealers Report Sales Gains; Shreveport Companies Step Up Quotas

Bridgeport, Conn.—Improvement in sales in both domestic and commercial lines is reported by Bridgeport refrigerator dealers for the first six weeks of 1931.

Steady improvement in domestic sales is reported by Sherman E. Whiting, of the Whiting Radio Service, Inc., 308 Fairfield Ave., Majestic dealer.

Kelvinator sales in January are considerably ahead of December, according to J. E. Logan, member of the refrigeration division of the Tucker Machine Co., 565 Fairfield Ave. The large increase was mainly due to a spurt in commercial installations, with domestic business holding its own, Mr. Logan says. The Tucker company's showrooms were recently altered and the display of refrigerators augmented.

Downes Smith Co., 540 Fairfield Ave., Frigidaire dealer, enjoyed a 60 per cent increase in total volume in January over December, according to A. F. Becker, manager. Commercial business, taken alone, showed an even greater jump, Mr. Becker says.

January sales were well above the quota, with many orders on hand and a large number of live prospects, reports Everett W. Allen, president of Allen Bros., Fairfield Ave. and Broad St., General Electric dealer. The concern has been successful in piling up a large volume of commercial business, Mr. Allen says, and he believes that the February sales volume will greatly exceed those of the corresponding month last year.

The L. M. Reed Corp., 347 Fairfield Ave., key dealer in Bridgeport for Copeland for some months past, has returned its sub-distributorship franchise to the New Haven Electric Co., New Haven, state distributors, and reverted to the status of a regular dealer. Several other dealers in Bridgeport, formerly under the Reed Corp., are retained. Merwin A. Pond, general sales manager for Reed, has resigned.

The B. H. Spiney Co., 930 Broad St., wholesale concern, is now handling the distribution of the Norge refrigerator in the Bridgeport area.

The American Oil Burner Co., 589 Fairchild Ave., is also retailing the Norge unit. A few Iceberg models are also carried by the oil burner concern.

FOELL IN NEW QUARTERS

Meriden, Conn.—Henry J. Foell, Servel dealer, has moved his showrooms from the Commercial Building at 101 Colony Street, to a new downtown location at 80 East Main Street.

Shreveport, La.—Increased quotas for this year are reported by several distributors of electric refrigerators in this territory.

Announcement has been made by H. P. McKean, manager of the electric refrigeration department of the Southwestern Gas & Electric Co., that the Kelvinator quota will be increased 50 per cent this year. This organization will also increase its advertising over the sales territory.

A. G. Riddick, Inc., General Electric distributor, has also increased the quota for the Shreveport branch office. R. H. Kaiser, branch supervisor, believes that 1,200 to 1,400 machines and cooling systems will be the probable volume of sales for the city of Shreveport for all local distributors. Mr. Kaiser's branch organization has set a quota of 500 domestic and commercial refrigerators for this year.

The Johnson Furniture Co., Servel distributor, recently announced that its refrigeration department will be under the supervision of P. B. Williams. Mr. Williams formerly was manager of the sales department of A. G. Riddick, Inc.

ICE-O-MATIC DEALERS HOLD SALES MEETING

Milwaukee, Wis.—A sales and service meeting for Wisconsin Ice-O-Matic dealers operating under the Standard Radio Co., distributor, was held recently at the Astor Hotel.

Speakers were Stanley Bell, sales manager; B. Miles, research engineer; W. Marshall, assistant to the president; all of the Williams Oil-O-Matic Heating Corp., Bloomington, Ill.; John Zeeman, president, and I. R. Withuhn, general manager, of the Standard Radio Co.

MERIDEN WESTINGHOUSE DEALER APPOINTED

New Haven, Conn.—Connecticut Electric Refrigerating Company, 149 Temple Street, Westinghouse distributors for the state of Connecticut, has appointed Emmett J. Burke, proprietor of the Bridge Service Station, Cook Avenue, Meriden, as Meriden dealer for the Westinghouse refrigerator.

REPRESENTING COPELAND

Miami, Fla.—G. S. Richardson has been appointed Copeland distributor for eight southern Florida counties. His headquarters are at 1100 W. Flagler Street.



EVERY DOMESTIC PROSPECT

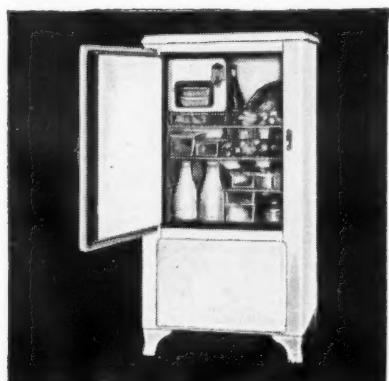


EVERY COMMERCIAL PROSPECT

... IS YOUR PROSPECT

WITH THE COMPLETE LINE OF

Kelvinator



The Kelvinator Yukon Model—the leader in the low-priced field. Available in 2 sizes, 5 and 7 foot food storage capacity. Over-the-counter Merchandise for the mass market.



The Kelvinator Standard Model—available in 4 sizes—4, 5, 7 and 9 foot—priced from \$210.00 f.o.b. factory, upwards. Kelvinator quality, value, performance and economy at a medium price.



Kelvinator Milk Cooling equipment has enjoyed a steadily increasing sale in every section of the country. It represents a valuable source of profit to dealers in the dairy and farming sections.

Electric Refrigeration Equipment

No other manufacturer in the electric refrigeration industry offers dealers such a complete line—so many different sources of volume and profit.

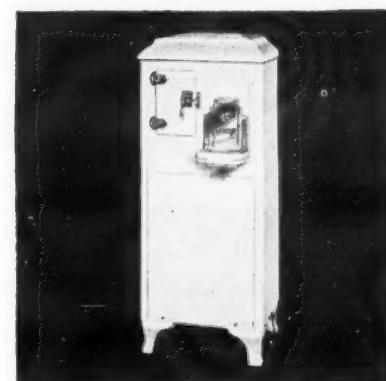
It is actually a fact that every prospect for electric refrigeration equipment in your city is your prospect if you are handling the full coverage, full profit Kelvinator Line.

And furthermore, regardless of whether it is an electric refrigerator for the home; a water-cooling system for a large office building; or equipment for any refrigeration requirement of modern business, you have the finest equipment that has been developed.

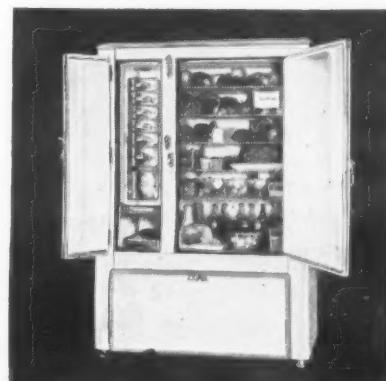
Complete market coverage—combined with the fairness of Kelvinator policies, the progressiveness of the organization, the recognized leadership of the Product, and the liberality of the Kelvinator Sales Agreement, make the Kelvinator Franchise the most desirable in the industry.

If you are interested in going into this further, send the coupon below. It will pay you to get the complete story.

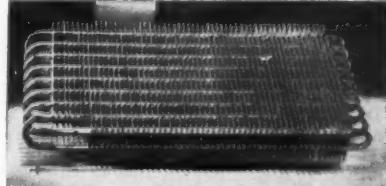
Kelvinator Corporation, 14245 Plymouth Road, Detroit, Michigan
Kelvinator of Canada, Limited, London, Ontario
Kelvinator Limited, London, England



Kelvinator Water Coolers supply modern business with pure, healthful water. A complete line of coolers and water cooling equipment. Bottle and pressure types for offices, banks, clubs, institutions, etc.

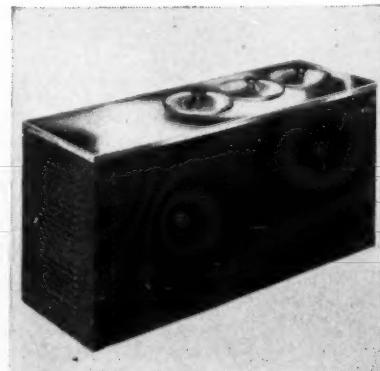


The Kelvinator De Luxe Model—the greatest achievement of a group of engineers who have made refrigeration history. Available in 5 sizes—6, 8, 11, 14 and 22 cubic feet. Priced from \$360.00 to \$755.00 f. o. b. factory.



Kelvinator Cooling Units include the Submersible Type, the Deep Fin Type, and the Flooded and Dry System Cross Fin Coils. The new Dry System Cross Fin Coil is the most revolutionary development in recent years.

(239)



Kelvinator Ice Cream Cabinets have won, on performance in the field, the reputation of being the best the industry has developed. A complete line of Portable and Remote Cabinets in 12 different sizes.



Kelvinator has the most complete line of condensing units in the industry. With 30 different units, there is a type and size for every refrigeration requirement. 17 years have proved their dependability.

C O U P O N

Kelvinator Corporation, 14245 Plymouth Road, Detroit, Mich.
Gentlemen: I am interested. Send the complete story about the Kelvinator money-making Sales Agreement.

Name _____

Street Address _____

City _____ State _____

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The Business Newspaper of the Refrigeration Industry

Published Every Two Weeks by

BUSINESS NEWS PUBLISHING CO.

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Editorial Aims of the News

- To encourage the development of the art.
- To promote ethical practices in the business.
- To foster friendly relations throughout the industry.
- To provide a clearing house for new methods and ideas.
- To broadcast the technical, commercial and personal news of the field.

Relieving Monotony

C. F. KETTERING, General Motors engineer, famed for his keen insight into human affairs as well as for his mechanical genius, has given an explanation of economic depressions which is both sound and understandable to the ordinary mind.

His reasoning also offers an explanation for the sale of one million electric refrigeration systems in 1930. And many business men have been very curious to know just how the electric refrigeration industry was able to defy the current economic trend and hang up a new high record of sales during the year just past.

According to Mr. Kettering, in a statement expressed some months ago, "overproduction" does not accurately express the cause for the business slump and the wave of unemployment which followed in its wake. "Production monotony" is a better term, he says, and goes on to explain that it means "making too much of the same thing."

If we understand Mr. Kettering correctly it means making too many automobiles that look just like those we bought the previous year, too many radios that are no different from the ones that now satisfy our desires, too many homes that look just like others on the same street, too many shows that the theatre-goer knows in advance will be just like a dozen others he has already seen. In brief, too many things that the public already has and of which it needs no more.

Mass Production

Mass production has certainly been a boon to mankind. Developed to its present degree of perfection and applied to a wide variety of products which almost the entire population of the United States either needs or wants, mass production has brought comfort, health and happiness to more people in a shorter space of time than anything has done ever before in the history of the world.

Its benefits have been so obvious that, with the demand continually stimulated by advertising (mass selling), there has seemed to be no limit to its progression. Indeed there should be none, until all of the people of the world have been supplied with the things it produces.

But mass production presupposes the demand on the part of many for something which the few have found desirable. Before the economies of mass production methods can be applied to a new product, it must first be made in small quantities, at relatively high cost, and sold to those who are willing and able to pay the price for something new and different. A new device must stand the test of a long and painful period of introduction or popularization before it is a candidate for mass production methods.

Electric refrigeration has enjoyed a tremendous

wave of popularity during the last five years, but for 10 years before 1925 the progress was barely discernable. Electric refrigerators were "whittled out" one at a time and sold as a luxury to the rich for 10 years before "big business" was willing to take the chance of investing millions of dollars in order to make this service available to the general public. New things, therefore, must be put through the luxury stage before they become a factor in "making prosperity" for the country as a whole.

During the decade just past several outstanding "inventions," or rather engineering developments, arrived at the point where they were ripe for mass production. The automobile, washing machine, vacuum cleaner, radio and motion picture are examples which come to mind most readily.

Consumption Lags

The production of these things, and many others, together with the skillful stimulation of public demand, created a situation whereby a great many people became extremely busy making something in order to earn money to buy that which they were making plus that which other men were making. Everybody was busy producing more than they consumed, trading that which they made for something made by the other fellow.

Each economic layer of the population was attaining that which was being enjoyed, by the layer above and was in turn tempting the layer below to want the same thing. Each succeeding layer had to "go to work" more ambitiously and skillfully than ever before in order to satisfy the newly created desires. But while all this was going on, while the luxuries of the past were being made necessities for the rank and file of the population, the top layers were not being supplied with new attractions. The rich were bored to death for some new way to spend money. In fact, several layers down the line were "all caught up" with almost everything which the market place had to offer. Witness the increasing stream of travel abroad, the multiplication of golf courses, night clubs, playgrounds of every variety.

Work Stops

The top layers had quit work, the middle layers were beginning to quit. They had not only quit working, they had *quit thinking*, at least about ways to make money. Money could be made on the stock market without working.

Even the "working man" was running out of things to buy. He had already bought a car—several of them. He had already bought a radio—several of them. He owned a washing machine and a vacuum cleaner. He attended all of the latest pictures. During 1930 there was nothing much left except an electric refrigerator, so 770,000 bought that for their homes. Probably a million more will buy electric refrigerators during 1931. Even at this rate it will be some time before the public gets "caught up" on electric refrigerators.

Stimulating Desires

Now what about the depression? Well, for one thing, a lot of people have gone back to work. More accurately, they have gone back to *thinking*, and thinking hard. They are looking for new ways to make money. They are devising new things and services to sell to the public. These thinkers will employ a lot of people who are not so good at thinking, but who are very anxious to work and make new things to sell to the public.

What does the public need? Easy question. For instance, the public needs a great many airplanes—and airplanes ought to be "ripe" for quantity production pretty soon. Also the public wants a lot of television sets—several million of them. But the desires of those who have money must be stimulated. New things, high priced luxuries, must be dangled before the eyes of the upper layers of buying power.

The electric refrigeration industry has been doing its part of the job. Also it is working on new things which will undoubtedly play an important part in the next big cycle of prosperity which is now getting under way. The electric refrigeration industry will do its part to relieve the *monotony of production*.

Letters from Readers

Companion Products

Bloomington, Ill.
February 11, 1931

Gentlemen:

Due to the fact that the Williams Oil-O-Matic Heating Corp. manufactures both an oil burner and refrigerator we have had an excellent opportunity to study the relationship between the two.

From an engineering viewpoint it has been an education for us to build both products.

Both devices are used in the home. Both are rapidly receiving consideration as necessities in the home of today.

Williams dealers who handle both Oil-O-Matic and Ice-O-Matic report very favorably on the advantages of being able to answer demand for automatic heating and refrigeration.

Heat and cold have always been thought of more or less as closely connected. When both are supplied automatically this relationship is bound to become even more pronounced.

Our laboratory work is always done with this thought in mind. We look upon the electric refrigerator and the automatic oil burner not necessarily as two distinct products, but rather as two links in the chain which insure a complete comfort cycle for the home owner and his family.

D. M. FRANK,
Williams Oil-O-Matic Heating Corp.

McClintock

St. Louis, Mo.
February 18, 1931

Gentlemen:

The Sales Publication Bureau, 211 Triangle Avenue, Dayton, Ohio, has recently published a book by Mr. Earl F. McClintock, entitled "Calling A Spade A Spade As Applied To Electric Refrigeration."

We are writing to ask if you have any means of obtaining some information for us in reference to Mr. McClintock. Who is he? And what has been his connection with the electric refrigeration industry?

Thanking you in advance for any information you are able to give us, we are

JAMES & COMPANY, INC.
By W. L. Burton,

Invaluable

Hamilton, Ont., Canada
February 6, 1931

Gentlemen:

I have enjoyed every issue of the ELECTRIC REFRIGERATION NEWS, and consider it invaluable in keeping abreast with the conditions in the trade.

I would like to read more news of

On Our Bookshelves

"CALLING 'A SPADE A SPADE' IN SELLING AS APPLIED TO ELECTRIC REFRIGERATION." Author: Earl F. McClintock. Publisher: Sales Publication Bureau, Dayton, Ohio. Copyright, 1931. Pages: 80. Price: \$2.85.

DESPITE the fact that this leather-bound volume is published in Dayton, Ohio (home base of Frigidaire, and more recently of Trupar) by a private publishing house, and that it does not mention the General Electric refrigerator by name any place in the volume, it apparently is designed for no other purpose than to help sell refrigerators equipped with the Monitor Top.

The first 28 pages are devoted to a discussion of the reasons why housewives should buy an electric refrigerator now.

The remainder of the book advances a series of arguments (under the heading: "The Woman Who, Seeing the Need, Is About to Buy the Wrong Make of Electric Refrigerator") calculated to demonstrate that the G. E. refrigerator is the best machine on the market, and to answer the arguments that this unit is inconvenient because of the machine on the top (no top space to place utensils) and because of its low height (necessity to stoop to get at shelf space).

It also derides advertising emphasis upon temperature regulators, vegetable pans, and low price.

This latter section presents a short history of electric refrigeration, and tells the story of how the first electric refrigerators were designed on the "automotive" plan, and how the "electrical" and "combination" types of units were developed during the course of time. It sets up the following criterion for an electric refrigerator:

"1. It must be efficient in maintaining

a constant temperature below 50 degrees, free from excessive moisture, and in providing ice cubes and frozen deserts within a reasonable time.

"2. It must be sanitary.
"3. It must be of long life.
"4. It must be economical to operate.
"5. It must be trouble-free and worry-proof and not require frequent repairs and costly replacement of parts.

"6. It must be quiet and remain quiet always.
"7. It must be convenient.
"8. It must be beautiful in appearance.
"9. It must require the minimum of attention on the part of the owner.
"10. It must be backed by the guarantee of a manufacturer of unquestioned reputation and of practically unlimited resources to protect that guarantee."

Any doubts as to the one make of refrigerator that McClintock thinks will meet these requirements are dispelled when one reads his eulogy on the merits of the "electrical" type with the "ault on top," following which he says:

"The 'electrical' type of electric refrigeration is represented on the market at this time by one make, manufactured by the world's leading organization. It embodies the idea of an extremely simplified mechanism, all of which is hermetically sealed in a casing of steel away from the ravages of dirt, air, and moisture, the natural enemies of any machinery. . . . The outstanding merit of the 'electrical' type is attested to by the fact that since its introduction on the market four years ago, *not one* owner has ever spent a cent for service or repairs. . . . If you really want to apply the business principle of true economy to the management of your home, you simply must act upon what your judgment tells you is the proper thing to do and buy—an 'electrical' type electric refrigerator—NOW."

Severs Connections

Chicago, Ill.
February 14, 1931

Gentlemen:

On February 9th, I resigned as vice-president and director of the Blazek Cold Storage Door Co., and severed my connection with Blazek & Co.

It is my intention to remain in the industry, and I shall shortly announce my future plans.

I shall appreciate it very much if you will inform your readers where they can get in touch with me.

HENRY H. DOBRY,
1407 Greenleaf Ave.

Special Refrigerators

Chicago, Ill.
February 16, 1931

Gentlemen:

Our difficulty in selling PAKKOLDS to beauty shops, and KOLDPAKS to doctors and dentists is, that they can't get the proper mechanical refrigerator.

To fit their requirements the refrigerator should have a freezing compartment of 2 to 4 good sized trays, a bottle storage of 1 to 2 cubic feet and a water cooling device for connection to city water or small bottle.

If you can put us in touch with some company building, or willing to build such a refrigerator please do so.

Thanking you we are,
Yours very truly,
R. LE BARQUE,
Le Barque Co.

Splendid Analysis

Dayton, Ohio
February 6, 1931

Gentlemen:

I want to take this opportunity to congratulate you on the splendid analysis made of applications for cooling equipment as printed on page 4 of the January issue of ELECTRIC REFRIGERATION NEWS.

This is the best thing of this kind that it has ever been my pleasure to see and I am wondering if you will be good enough to let us reproduce it, with full credit to your paper, for distribution to our commercial selling organization.

Best personal wishes.

Sincerely yours,
J. J. NANCE,
Sales Promotion Manager,
Frigidaire Corp.



ACCESSORIES
BY
Seeger
SAINT PAUL

A presentation of three profitable, fast moving accessories.

The Seeger Fruitray for keeping any seasonable fruit, like oranges, and apples in a solid, wholesome condition. Furnished at a slight additional cost.

The Seeger Vegetable Chiltry for keeping lettuce, celery and other greens in a crisp, snappy condition—retaining original freshness and flavor. Wilted vegetables are revived and made palatable when placed in Vegetable Chiltry for short time. Furnished at slight additional cost.

Legs—either in white porcelain or white genuine lacquer—can be had at slight additional cost, to fit any Cabinet by Seeger. Four various heights: 4 inch, 6 inch, 8 inch and 11 inch.

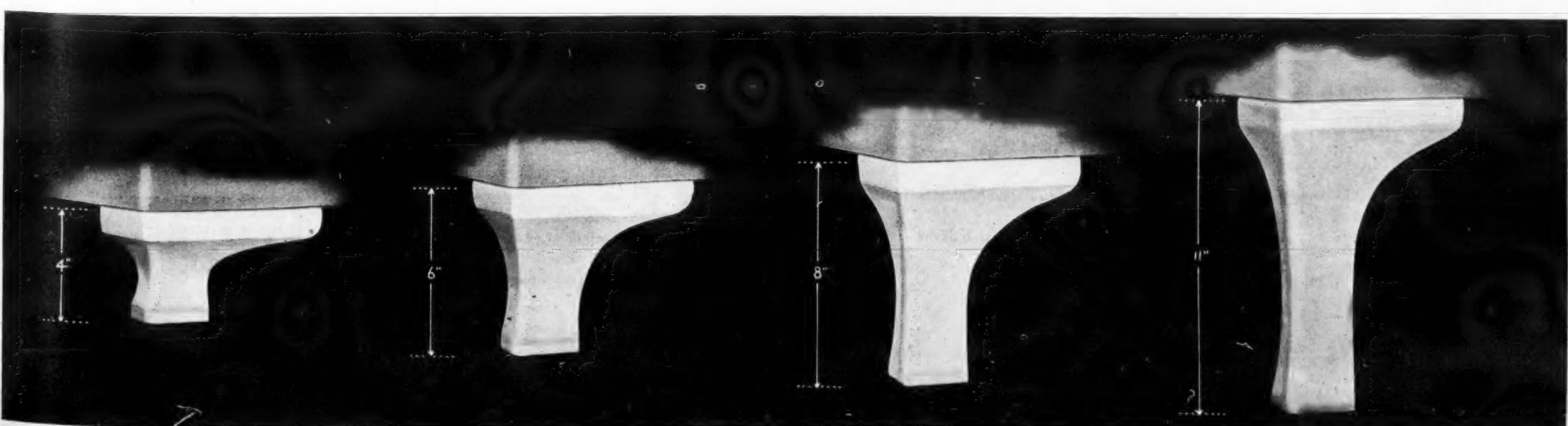
SEEGER REFRIGERATOR COMPANY
SAINT PAUL, MINNESOTA

Madison Ave.,
Between 46th and 47th Sts.
NEW YORK, N. Y.

655-57 So. La Brea Ave.
LOS ANGELES, CAL.

Statler Building
BOSTON, MASS.

228 North LaSalle St.
CHICAGO, ILL.



Wholesalers, Factory Branches Handle 96.7% of 1929 Refrigeration Output

Washington, D. C.—Wholesalers' and manufacturers' sales branches were the principal buyers of mechanical refrigerators from manufacturers in 1929, according to a recent report of the Bureau of Census of the Dept. of Commerce.

Of the total sales in 1929 amounting to \$161,334,000, 96.7 per cent, or \$155,985,000, were made to these outlets.

The remaining sales were made as follows: 1.4 per cent, or \$2,289,000, to commercial and industrial consumers; 1.2 per cent, or \$1,882,000, to retailers; and .7 per cent, or \$1,178,000, to home consumers.

Total sales made through manufacturer-

ers' agents, selling agents, brokers and commission houses amounted to .3 per cent, or \$490,000.

The 32 establishments classified under the industry designation, "Mechanical Refrigerators," are those engaged primarily in the production of domestic electric refrigerators consisting of units complete with cabinets, units without cabinets, evaporators and compressors without cabinets; commercial refrigerating machines, not over 500 pounds ice-melting capacity in 24 hours, consisting of water coolers, ice cream cabinets; absorption-type refrigeration systems; and replacement parts.

SALES BY MANUFACTURERS OF MECHANICAL REFRIGERATORS, 1929

	Selling Value (F. O. F. Factory)	Percentage of Sales	Number of Plants
Total.....	\$161,334,000	100%	32
Sales to wholesalers and manufacturers' sales branches ²	155,985,000	96.7%	21
Sales to retailers.....	1,882,000	1.2%	8
Sales to commercial and industrial consumers.....	2,289,000	1.4%	6
Sales to home consumers.....	1,178,000	.7%	13
Volume of above sales made through manufacturers' agents, selling agents, brokers, and commission houses.....	490,000	.3%	4

²The total number of establishments engaged primarily in the manufacture of refrigerators is 32. Inasmuch as some establishments sell to more than one type of customer, this figure is less than the total of the figures shown below.

³Combined to avoid the disclosure of individual operations.

PRALL CLOSES ORDER FOR 55 UNITS

New York, N. Y.—A. M. Prall, syndicate representative of Rex Cole's commercial department, recently landed an order from the Standard Oil Co. of New

Jersey for 45 model S-62 G. E. refrigerators and nine model DP-1 pressure water coolers. H. C. Hilton was the purchasing agent who placed the order.

These refrigerators will be delivered to pumping stations in Oklahoma and Missouri belonging to the Ajax Pipe Line Co.

How Leading Manufacturers Are Improving Their Cabinets

The Coating affords protection against Rust! (Zinc coated)

Under the most difficult operations of Cabinet Production the Coating will not Break or Peel.

It offers an ideal surface (a bond) for Lacquer, air drying or Baked Enamel.

It will retain these finishes under severe conditions of use.

Rust-Resisting Cabinets constructed of



offer the Highest Efficiency Obtainable

Through the widespread adoption of this special coated sheet metal cabinet manufacturers have brought about a basic improvement.

Manufactured by

The Superior Sheet Steel Company

Canton, Ohio

Division of Continental Steel Corporation, Kokomo, Indiana

Manufacturers of



Operating Plants at Kokomo, Indiana, Indianapolis, Indiana—Canton, Ohio

Frigidaire Makes Showing at Paris Household Show



Large refrigeration exhibit attracts attention.

EXPORT SHIPMENTS OF REFRIGERATORS

November Shipments Reported by the Bureau of Foreign and Domestic Commerce

	Electric Household Refrigerators	Electric Commercial Refrigerators Up to 1 Ton	
		No.	Val.
Austria	28	3,219	1 127
Belgium	7	958	18 2,475
Denmark	16	1,361	13 1,304
Finland .....	...	...	3 318
France	261	16,069	2 473
Germany	9	825	11 732
Greece	11	1,442	.. ..
Iceland	4	426	.. ..
Irish Free State	12	572	.. ..
Italy	16	2,711	5 549
Netherlands	9	2,192	13 2,472
Norway	1	234	7 622
Poland and Danzig	6	394	.. ..
Portugal .....	...	...	8 3,261
Soviet Russia in Europe .....	...	...	2 440
Spain	14	2,130	6 1,344
Sweden	63	7,786	9 1,001
Switzerland	14	1,828	19 2,480
United Kingdom	66	6,419	118 18,766
Canada	282	29,418	22 6,839
British Honduras	2	321	.. ..
Costa Rica	4	654	.. ..
Guatemala	3	337	1 224
Honduras	2	129	.. ..
Nicaragua .....	...	...	3 567
Panama	72	18,941	7 2,368
Salvador	3	623	1 163
Mexico	123	22,221	.. ..
Bermudas	9	1,320	4 1,734
Barbados	3	439	1 218
Jamaica	4	888	.. ..
Trinidad and Tobago	8	1,583	.. ..
Other British West Indies	11	1,945	1 504
Cuba	62	9,636	33 6,750
Dominican Republic	2	834	5 2,643
Netherland West Indies	1	385	.. ..
Argentina	79	15,380	28 11,789
Brazil	130	17,040	12 1,048
Chile	27	5,155	24 3,393
Colombia	30	2,079	7 1,866
Ecuador	15	2,315	.. ..
British Guiana	4	220	.. ..
Paraguay	10	1,399	2 1,105
Peru	1	150	1 221
Uruguay	139	22,210	28 4,306
Venezuela	43	5,723	7 1,177
Aden	1	166	.. ..
British India	9	1,662	2 156
British Malaya	14	1,948	.. ..
China	42	4,119	3 1,168
Java and Madura	7	1,147	.. ..
French Indo-China	45	5,454	.. ..
Japan	2	340	15 3,854
Palestine .....	...	...	1 419
Philippines Islands	104	12,913	115 27,679
Syria	1	35	.. ..
Australia	1	130	22 4,149
New Zealand	10	552	.. ..
British East Africa	2	590	13 2,940
Union of South Africa	498	69,704	3 500
Gold Coast	9	1,589	1 137
Nigeria	25	3,075	.. ..
Other British West Africa	6	818	.. ..
Egypt .....	...	...	13 1,081
Other French Africa	2	622	.. ..
Morocco	3	657	.. ..
Mozambique	6	520	.. ..
Total	2,393	\$315,952	610 \$125,422
Shipments to—			
Hawaii	194	\$ 30,064	34 \$ 3,919
Porto Rico	96	\$ 17,741	7 \$ 1,960

Production of Radio Equipment, 1929 and 1927

Figures by Department of Commerce

Kind	1929 Number	1927 Value	1929 Number	1927 Value
Radio equipment, phonographs, and parts and accessories, aggregate value (a)	\$439,961,776	.....	\$270,497,270	
Combination phonographs and radios	152,106	\$22,193,702	31,342	\$6,416,462
Radio receiving sets (not including tubes):				
For 6 tubes or fewer	637,921	\$31,264,855	.....	.....
For 7 tubes or more	4,000,494	\$195,926,495	.....	.....
Not reported by size	299,684	\$23,410,812	1,978,057	\$95,162,393
Other sets	(c)	\$472,803	.....	.....
Transmitting sets	2,243	\$5,788,077	1,093	\$2,233,483
Loud speakers	3,301,314	\$30,279,287	2,458,785	\$18,833,751
Transformers	5,204,505	\$9,478,891	4,116,046	\$5,447,403
Radio accessories and parts (kits, amplifiers, power packs, microphones, controls, eliminators, head sets, etc.)		\$57,027,008	.....	\$54,591,302
(a) Not including value of radio and phonograph cabinets made by establishments engaged primarily in the manufacture of furniture.				
(c) Data on crystal and short-wave sets incomplete.				



A clear view easy reading thermometer—designed to give the utmost in instrument accuracy and dependability.

Easily interchangeable refill. Nickel plated brass case, not affected by brine.

MANUFACTURED AND GUARANTEED BY
Carroll Glass Instrument Co.
PHILADELPHIA, PA.

Precision Built VALVE Needles VALVE Seats VALVE Mechanisms

Four years of satisfactory service to the industry

Buerk Tool Works
42 Pearl St.
Buffalo, N. Y.

ELECTROLUX

Sales...

reach new high *in*
PHILADELPHIA!

THE City of Brotherly Love is fast going Electrolux. During the month of December alone, better than 10 retail sales a day—a total of over 350 Electrolux refrigerators—marked Philadelphia's acceptance of this silent automatic refrigerator.

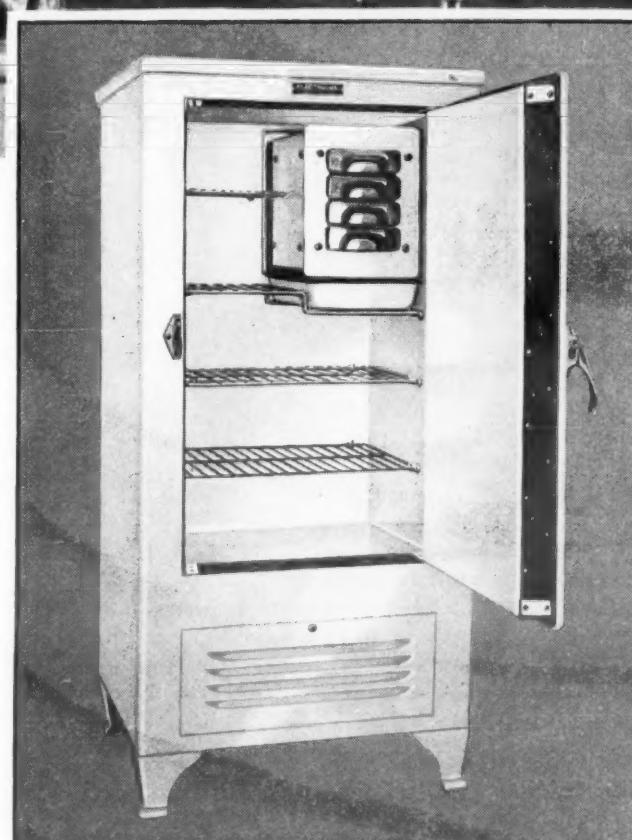
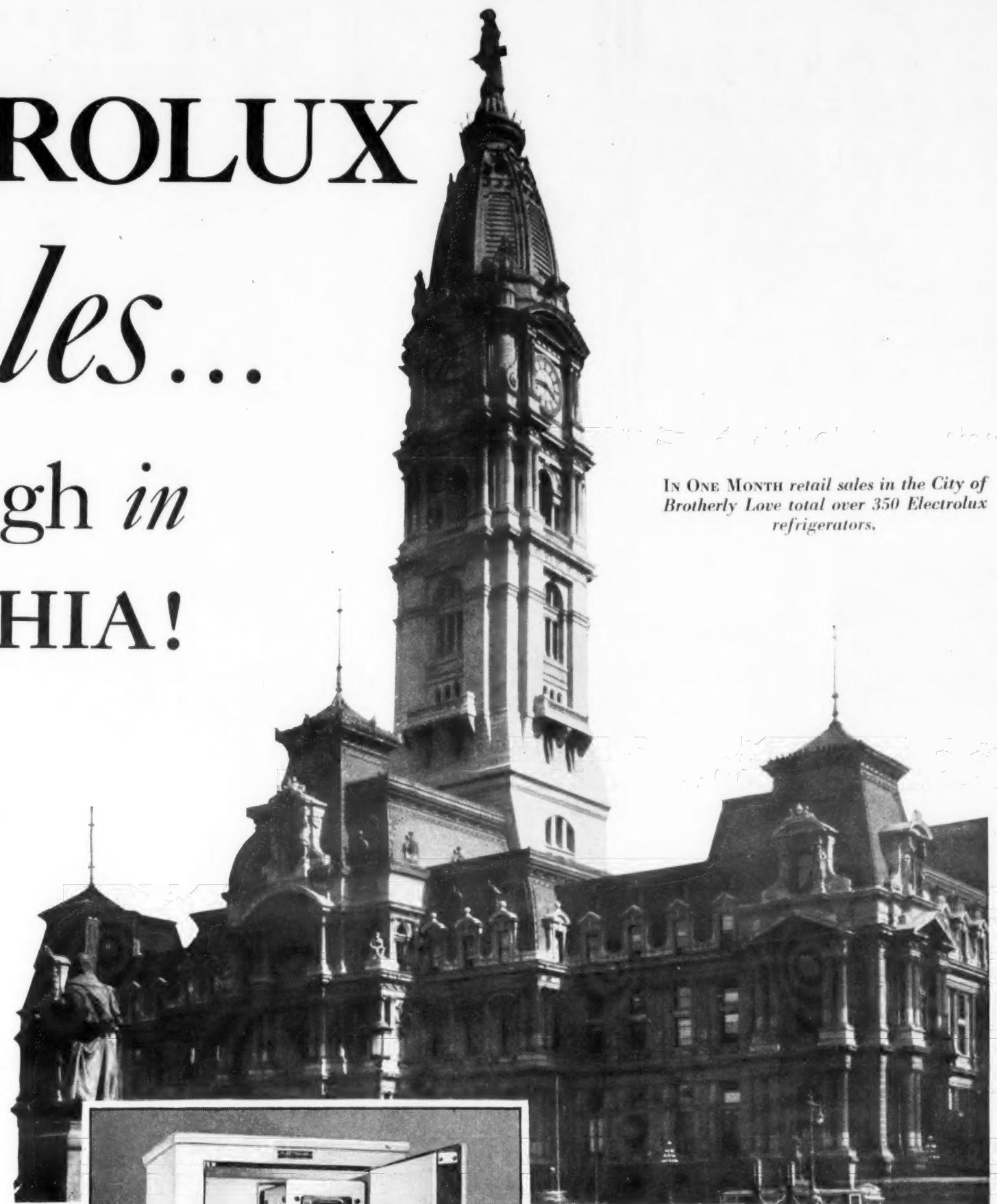
To sell automatic refrigerators to equip an entire apartment house is one thing. Records show the growing predominance of Electrolux in this field. In one large metropolitan community last year, 8 out of every ten new apartment houses were installed with Electrolux.

To sell automatic refrigerators to private home owners and apartment tenants who have no automatic refrigeration is another type of sales job. In this, Philadelphia is typical of the fine work Electrolux dealers are able to do in covering this profitable market.

In both the wholesale and the retail fields, Electrolux has proved a winner from the word "go." In three short years, its distribution has grown to reach from coast to coast. Recognition of its exclusive advantages has brought constantly increasing sales returns. Every day Electrolux is finding new friends, is penetrating successfully into even those communities where conservatism and habit conspire to slow up the acceptance of modern ways of doing things.

In your community, every home and apartment house—new and old—is a rich market for Electrolux. Housewives show decided preference for Electrolux economy, silence and dependability. Builders and owners choose Electrolux because it means freedom from refrigeration complaints. January has gone; there still remain 11 months in 1931 from which to take greater refrigeration profits. Electrolux Refrigerator Sales, Inc., Evansville, Ind.

IN ONE MONTH retail sales in the City of Brotherly Love total over 350 Electrolux refrigerators.



A tiny gas flame takes the place of all moving parts

NOISELESS . . . AMAZINGLY INEXPENSIVE to operate. These are two of the chief reasons for the great and growing acceptance of Electrolux. Kitchenette Model, one of the most popular sizes, is shown at the left.

ELECTROLUX

THE *Gas* REFRIGERATOR

FORGED BRASS FITTINGS BUILT RIGHT TO STAY TIGHT

To confine the various refrigerants used by automatic refrigeration so that no possibility of leakage can occur is a job for the very best in tube fittings.

Advances in the art of mechanical refrigeration demand positive seepage-proof fittings such as are manufactured by Commonwealth.

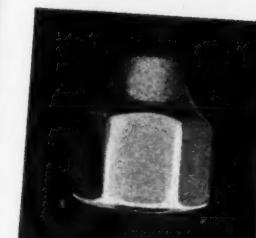
By every standard of design, metal, machining, inspection and packing, Commonwealth Brass Corporation refrigeration fittings will be found worthy, as they have for upwards of nineteen years, ever since the birth of the industry.



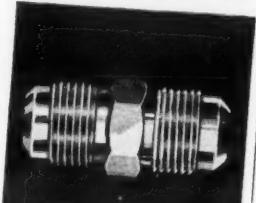
Send for Catalog No. 36, fully descriptive of the most complete line of refrigeration fittings on the market.

**COMMONWEALTH
BRASS CORPORATION**
COMMONWEALTH AT G.T.R.R.
DETROIT

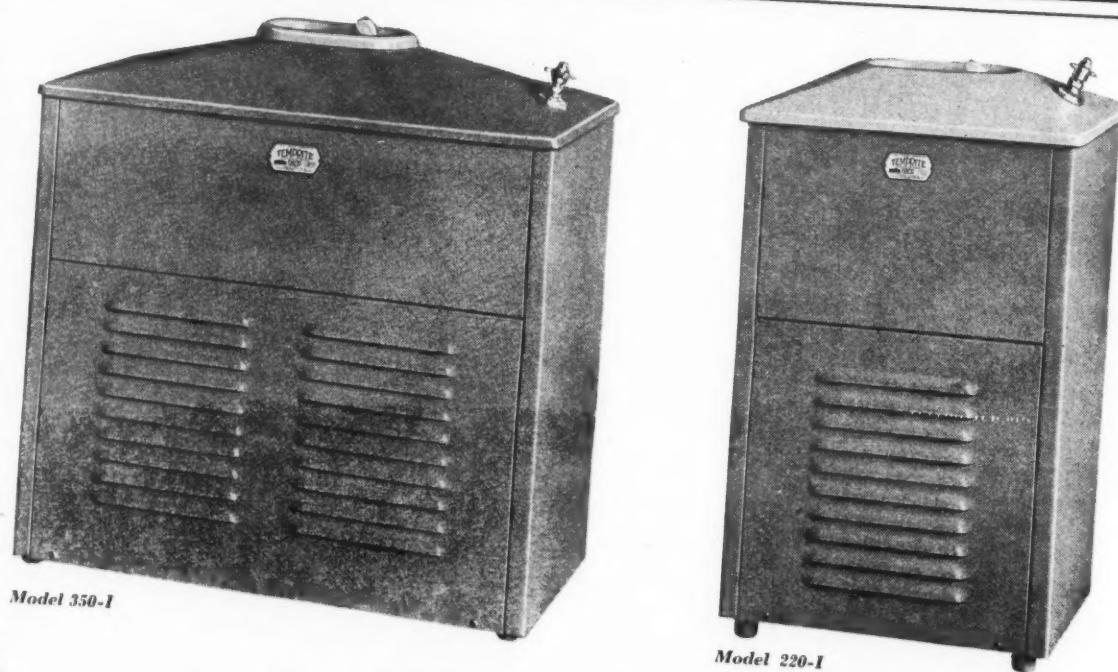
Elbows and Tees made from forgings and guaranteed Seepage-proof.



Forged Nuts produced by the hot forging method.



Unions whose tube seats are protected in shipping.



Model 350-I

Model 220-I

Special TEMPRITES For Heavy Duty

THESE two Industrial Cabinets are equipped with special TEMPRITE cooling units. The waste water is used as a pre-cooler which gives these two TEMPRITE Industrial Coolers almost double the capacity previously obtainable with the compressor that can be installed in the machine compartment.

Steel mills, foundries, large industrial plants of all kinds are immediate sales outlets for these large capacity Industrial Coolers. The model No. 220-I has a capacity of approximately 15 gallons an hour, while the model No. 350-I is capable of delivering 30 gallons an hour of constant, controlled temperature drinking water. This model can also be equipped with a faucet on the end for workers to use in filling bottles, buckets, etc. (See compressor specifications for size of compressor that can be installed in these TEMPRITES) These TEMPRITE industrial coolers

are completely sanitary, sturdily built of heavy furniture steel and finished in grey kirlac. The model No. 220-I has an all porcelain top and the No. 350-I has a porcelain receptor. The tops of both models are sloped to prevent workers laying tools on them.

Write for descriptive literature on these TEMPRITE coolers.

MODEL 220-I

Height, 34½ in., width 23 in., depth 18 in.
Water connections: inlet, 3½ in., drain ½ in.
Cooling capacity limited only by size compressor that can be installed. Compressor compartment size—19 in. high; 19 in. wide; 17 in. deep.

MODEL 350-I

Height 41 in., width 38 in., depth 20 in.
Water connections: inlet ¾ in., drain ½ in.
Cooling capacity limited only by size compressor that can be installed. Compressor compartment size—20 in. high; 34½ in. wide; 19 in. deep.



LIQUID COOLER CORPORATION
6527 RUSSELL STREET

West Coast Distributors, Refrigeration Products, Ltd.,
1110 N. Alameda Street, Los Angeles, Calif.

THE EXPANSION VALVE

Stories of Interesting PEOPLE in the Refrigeration Industry

By GEORGE F. TAUBENECK

A few years ago the Chrysler Corp. offered a whopping big contract for composition steering wheels to the United States Rubber Co., of Providence, R. I. But there were strings attached.

These steering wheels were not to warp or crack under the most trying of atmospheric conditions. They must hold up equally well in Alaska and in Panama. For boggies the Chrysler engineers set up test temperatures of 178° F. above and 40° F. below zero.

Through two years the Providence concern experimented. At last there came from its laboratories a product which could "stand the gaff" of the rigorous Chrysler demands. But how could these men prove that their product would perform exactly as told?

Heating the wheels to a 178° F. temperature and seeing how they liked it was no trick at all. Finding a spacious refrigerator which would get down to 40° F. below zero and camp there for days at a stretch was another matter.

One of the engineers, however, had a friend in Brighton, Mass., who was experimenting with a refrigerating machine which used air as a refrigerant, and which was said to get low temperatures in a more or less nonchalant and effortless fashion.

The friend, M. J. Ajam of the Devon Mfg. Co., adapted the unit his company had developed to the rubber company's needs without further

ado. It is now in constant service on the steering wheel test line.

In the company of E. L. Edmunds, production manager, Ajam is still making up experimental refrigerators of various types, still refining the unique unit.

These two research engineers, with an assistant, have a big three-story factory building all to themselves. There they watch the progress of old models, and attempt to further simplify the design. C. L. Stevens, a consulting engineer whose time is largely occupied with putting ailing factories on their feet again, foots the bills.

At present there are two bottlenecks which are holding up quantity production of this air-refrigerated job.

One is a part (slotted 'fork on a triangle) which cannot be made just now without considerable wastage in machining. The other is the size of the unit. It is so big as to be extravagant in a five cubic foot box. For cabinets of nine cubic feet capacity or more, they think it can be made economically.

By simply changing the size of the motor and stepping up the pressure (requiring a different plug) the same Devon unit can be made to cool any capacity up to 75 cubic feet, Ajam and Edmunds claim.

They also say that this air-refrigerator machine is one of the early pioneers among electric refrigerators.

As far back as 1917 the Automatic Refrigeration Co., of Hartford, was selling an electric refrigerator, using air as a refrigerant, which was a progenitor of the Devon Air. These ancient models were marketed under the trade name of "Odin." Some are still running.

Ivar Lundgaard, now sales manager of the Rochester, N. Y., Gas & Electric Co., took out basic patents on the machine in the fall of 1929 (reported in the October 23, 1929 issue of ELECTRIC REFRIGERATION NEWS).

One of the novel features of the refrigerator which Ajam and Edmunds are living with these days is the location of the chilling compartment.

Unlike all other electric refrigerators, this one has no evaporator and ice cube trays in the cabinet proper. Ice cubes are made in a compartment in the bottom half of the cabinet, just above the machine. One pulls out a drawer, and there is the ice—26 pounds of it.

Another odd feature is the method of cooling the food compartment. Formerly cold air, given impetus by a special fan, did the trick. Now it's done by circulating Prestone, the fluid we put in automobile radiators to prevent freezing.

Apropos of nothing at all, we might add that Ajam is a native of Asia Minor, and is particularly at home in Arabia.

The New England Refrigerator Co., G. E. distributing organization in Boston, believes in the power of suggestion.

It advertises far and wide that its address is ZERO Park Street in Boston. To gild the lily a whit, its display room, presided over by Messrs. Howe and Bell, is in the basement (although visible from the sidewalk outside) of the building.

THE STANDARD STEEL CO.

150 Water Street

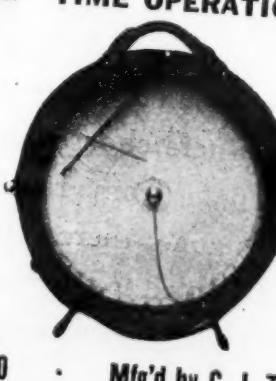
OFFERING

150 NEW TAG PORTABLE
TIME OPERATION RECORDERS

PRICE
\$15.00

Recording the
running and idling time of
refrigerator motors

Factory List, \$55.50



10" dia. Chart
Can be used on
110 volts
A. C. or D. C.

Complete with
100 charts, bottle of ink
and accessories

Mfg'd by C. J. Taglabue Co., N. Y.

Thus, when one enters this monitor top emporium, he is below zero.

Just to pursue this what's-in-a-name business to its logical conclusion, we'd like to point out that adjoining this "below zero" salesroom is a famous old church.

A sign in front of this house of worship, after naming the preacher and listing the hours of service, boldly proclaims the name of "John Hermann Loud, organist."

Guy Howe, domestic sales manager of the ZERO Park Street organization, maintains that his salesmen are so optimistic about prospects for 1931 that they are having new suits made with extra large pockets—to take care of all the money they expect to make.

"People are all sold on electric refrigeration up here," says Mr. Howe, "and a great many really wanted to sign on the dotted line last year, but held back because of the depression."

"Now that the veil of gloom is lifting, these already-sold prospects are coming in to buy. Add these hold-over customers to all the new ones we can normally expect to sell during the year, and the total predictable sales volume for 1931 mounts pretty high."

H. Spencer, Norge production and service manager, is a brave man.

To the industry-at-large he is respected for his Herculean feat last spring of converting almost overnight an empty Borg-Warner building into an efficient, well-planned factory for the line production of Norge rollators.

Within his own organization, however, he is respected as the only man now alive who can keep a supply of R. E. Densmore's private brand of cigars in his desk without suffering asphyxiation or seeing his desk walk away.

To an ordinary mortal three puffs on one of the stogies which keep the elongated Norge sales manager in good humor are almost equivalent to poking one's jaw into a barrage of right hooks and left uppercuts administered by Jack Dempsey in his prime.

Spencer, however, is apparently immune. Even so, his men at the factory are thinking about the wording for an appropriate tablet, just in case . . .

"You can almost measure the advancement toward civilization of a nation by noting how far it has progressed in the use of refrigeration," avers Gardiner Poole, erudite and well-traveled executive of the Birdseye Frosted Foods Co.

"Absence of refrigeration or poor attempts at it, usually denote prevalence of disease, brief life-spans, little regard for sanitation, and small effort to either advance the interests or assimilate the teachings of science."

Mr. Poole should know whereof he speaks. He is president of the American Institute of Refrigeration. He has been an official delegate of the United States to the last two World Refrigeration Congresses, and has traveled extensively during the course of long periods of research.

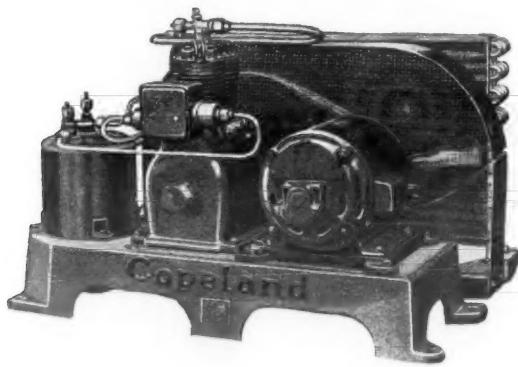
Naturally, he thinks we are, comparatively, rather highly civilized here in the United States, with our notable degree of acceptance of electric refrigerators, and our development of quick-frozen foods.

The 1931 COPELAND COMMERCIAL LINE COVERS THE ENTIRE FIELD!

The 1931 line of Copeland Commercial Equipment is the finest and most complete that Copeland has ever built. Important additions, together with refinements and improvements, make the 1931 Copeland Line so flexible and powerful that it covers the entire commercial electric refrigeration field.

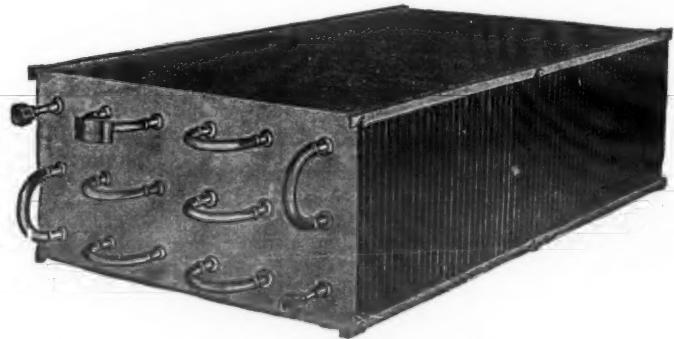
Included in the 1931 Copeland Commercial Line is equipment for stores, restaurants, hotels, cafeterias, dairies, offices and apartment buildings—to name a few. In addition, Copeland has made available this year a complete new line of ice cream cabinets.

Many refinements embodied in the 1931 Copeland Commercial Line contribute toward more efficient, economical and dependable operation. Among these is the new commercial multiple expansion valve, with Frost Line Control—exclusively Copeland's.



CONDENSING UNITS

Cast-iron bases—improved discharge valves—larger condensers—are new features found on the 1931 Copeland Condensing Units.



COPELAND-LARKIN COILS

This year, 93 standard sizes of Copeland-Larkin Coils with Frost Line Control are available for commercial equipment—giving an extremely wide range of application.

With the 1931 line of equipment, Copeland dealers will sell more electric refrigeration this year than ever before—and there is real money in commercial sales! Copeland now offers you an opportunity—if you have never sold commercial equipment, Copeland will teach you how! Write for complete information.

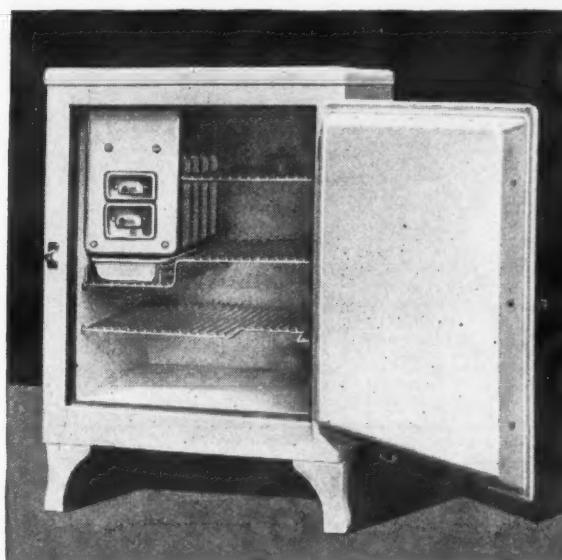
COPELAND SALES COMPANY

332 CASS AVENUE, MT. CLEMENS, MICHIGAN



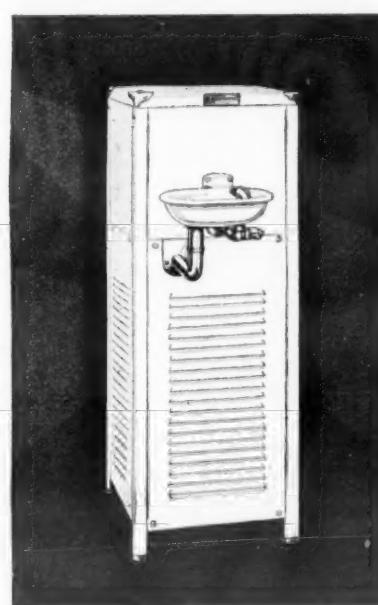
ICE CREAM CABINETS

The 14 models included in the new line of Copeland-Consolidated Ice Cream Cabinets are equipped with specially designed coils and condensing units.



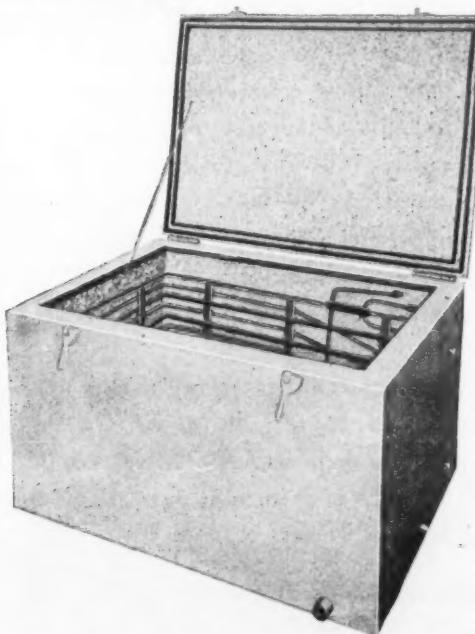
APARTMENT HOUSE EQUIPMENT

A unit for multiple installations, as well as a complete line of apartment house cabinets, are offered this year by Copeland.



WATER COOLING EQUIPMENT

For 1931 two Copeland water cooler models are offered—pressure and bottle types. For larger requirements, 6 sizes of ice water generators are available.

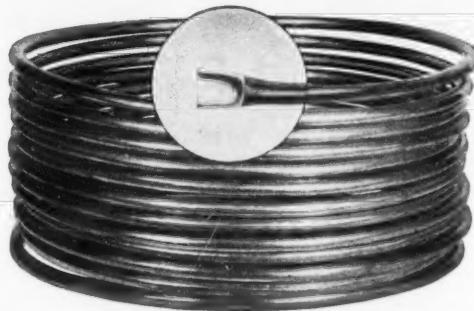


DAIRY COOLING EQUIPMENT

Milk-cooling equipment of the submerged type, both for standard and home-made cabinets, is included in the 1931 Copeland line.

DEHYDRATED WOLVERINE SEAMLESS COPPER TUBING

Highest quality seamless copper tubing—perfectly dehydrated and solder-sealed—made to A. S. T. M. Specifications (B-68-30-T)—ready for quick installation. Send your production requirements for quotations, or wire for rush shipment from stock.



WOLVERINE TUBE CO.

SEAMLESS COPPER • BRASS & ALUMINUM

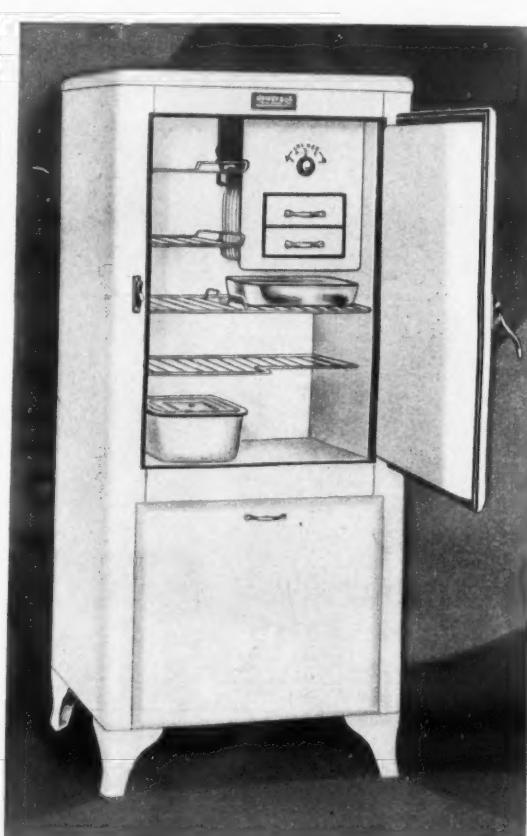
1491 Central Ave.

Detroit, Mich.

Phone Cedar 5000

Export Department—H. M. Robins Company,
120 Madison Avenue, Detroit, U. S. A.
Cable Address: Robns, Detroit

Sales offices in all major cities. Stock available at Los Angeles,
224 E. 11th St. Write or wire for name of nearest representative.



Universal Cabinet
No. LP-5. A 5 cu.
t. self contained
model.

Universal Cooler

... quality and
economy..win sales

NO glowing superlatives are needed to sell the new line of self-contained Universal Coolers—their unquestionable value is instantly apparent. They are equipped with the ever dependable and economical Universal Compressors and possess every desirable feature including the Refresh-O-Pan, cold regulator, porcelain interior, massive chromium plated hardware, one rubber tray and 5 inch legs—and their unusually attractive prices make for easy sales in these days when price is considered a factor.

Complete information upon request.

Universal Cooler Corporation

Detroit, Mich. - - - Windsor, Ontario, Canada

Leonard Calls In Field Staff for Conference



Leonard men attending the recent sales conference: (Front row, left to right)—B. T. Roe, Ted MacGrath, A. M. Taylor, A. H. Jaeger, W. W. Garrison, R. W. McCasky, R. W. Tyler. (Second row)—J. B. Nicolson, F. W. Meeks, W. W. Quant, B. E. White, I. E. Cope, G. J. Sikkenga, G. J. Whittier, A. B. Curtis, Jr., R. G. Nelson, Frank Merizon, A. E. Gibson

MAJESTIC DEALERS HOLD CONVENTIONS IN EAST

Buffalo, N. Y.—Dealer meetings for the 190 Majestic dealers in the seven New York counties and four Pennsylvania counties served by the Majestic Wholesalers, Inc., of this city, were held in the mahogany room of the Lafayette Hotel here on Feb. 17 and 18, and in the Reid House in Erie, Pa., on Feb. 19 and 20. Eighty-five of the dealers are handling the Majestic refrigerators, according to Richard Glennie, president of the distributing organization.

Attracting particular interest at the meetings were the new Majestic radios with the "Multi-Mu" screen grid tube, type G-51. Parts, accessories and testing meters for both the refrigerators and radio sets were also on display.

Dealers from the following New York towns attended the meetings: Jamestown, Salamanca, Olean, Buffalo, Westfield, and Dunkirk. Pennsylvania dealers came from Bradford, Erie, Warren, Meadville, and Titusville.

KELVINATOR HOST TO COST ACCOUNTANTS

Detroit, Mich.—Nearly two hundred members of the Detroit chapter of the National Association of Cost Accountants and their guests recently held their regular chapter meeting at the Kelvinator plant.

The big party made an inspection of Kelvinator factory operations and later adjourned to the auditorium for the dinner and chapter meeting.

They were welcomed by H. G. Perkins, assistant to the president, who introduced the principal speaker, A. E. Grover, cost consultant of the National Machine Tool Builders' Association of Cincinnati.

This organization holds its chapter meetings at various leading industrial plants, observing production as a part of their study of cost accounting.

Sales Plans For 1931 Presented

Detroit—Preparations for the 1931 Leonard selling campaign, with special reference to the two electric refrigerators recently added to the line, were made by the Leonard Refrigerator Co. at a three-day sales meeting held at the executive offices of the Kelvinator plant here, Feb. 8-10.

A. H. Jaeger, first vice-president and sales manager of the Leonard Co., presided at the meeting. Principal speakers were George W. Mason, president of both the Leonard Refrigerator Co. and Kelvinator Corp.; H. W. Burritt, vice-president of both companies; A. M. Taylor, advertising director for Kelvinator and Leonard; W. W. Garrison, vice-president of the McJunkin Advertising Co. of Chicago, and A. E. Gibson, Refrigeration Discount Corp.

The sales representatives in attendance at the meeting were: J. B. Nicolson, Los Angeles; I. E. Cope, Dallas, Tex.; R. W. McCasky, Chicago; B. T. Roe, Pittsburgh; R. W. Taylor, Jacksonville, Fla.; J. B. Whittier, Larchmont, N. Y.; G. J. Sikkenga, Muskegon, Mich.; H. F. MacGrath, newly appointed salesman, of Detroit, and A. B. Curtis, Jr., Dayton, Ohio.

ROYCRAFT PICKS NEW SALES MANAGER

Minneapolis—J. W. Henderson, district supervisor for the Grigsby-Grunow Co., has joined the Roycraft Corp., Majestic distributor here, as sales manager, according to an announcement by L. W. Cohen, president of the company.

Prior to going with Grigsby-Grunow, Mr. Henderson was district sales manager for the Thomas A. Edison, Inc., in the northwestern territory. He was also with the Servel and Holmes electric refrigerator sales organizations for several years.

GREENWOOD DISCUSSES BIG N. E. L. A. PROGRAM

Chicago—The National Refrigeration Program, sponsored by the Electric Refrigeration Bureau of the National Electric Light Association, which has for its purpose the sale of 1,000,000 electric refrigerators in 1931 as the first step in a three-year program, was presented by C. E. Greenwood to representatives of Electric Leagues at a two-day conference held here recently at the headquarters of Electric Association.

Covering the whole gamut of subjects concerning the development of co-operative business programs, the conference, aside from presenting two special addresses, resolved itself into an open forum during which secretary-managers of leagues dealt with problems that affected their day-to-day activities.

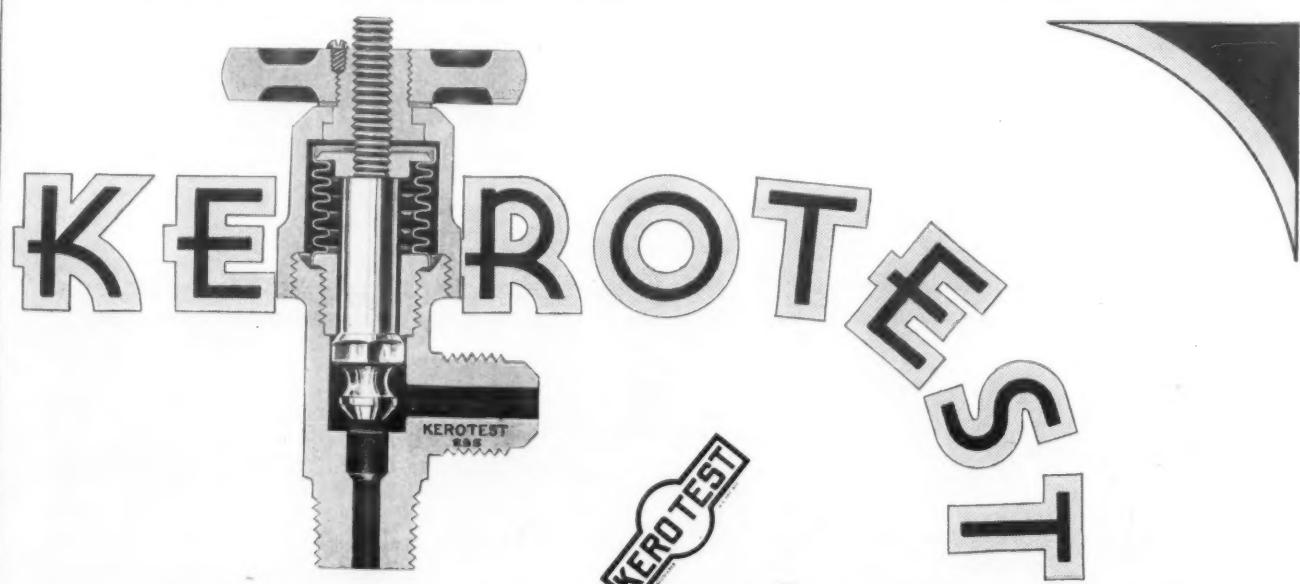
The two speakers were Samuel Inssull, Jr., president of the Electric Association of Chicago, and C. E. Greenwood, commercial director of the National Electric Light Association. The former, addressing a special luncheon meeting, outlined what he conceived to be the place of the electrical leagues in the industry.

Mr. Greenwood, presenting the Refrigeration Program for selling a million units during 1931, emphasized the fact that this program had been developed entirely from the co-operative angle and, therefore, the leagues would be an important part of the industry's structure in co-ordinating the various local units to do an effective job in selling.

DETROIT COMPANY NAMES TWO DISTRIBUTORS

Detroit—The Broering Co., Zero-zone distributor covering 23 counties in the Cincinnati territory, has recently been appointed Temprite distributor.

The Adam Snider Co., of Terre Haute, Ind., has also taken on distribution of Temprite coolers for the Liquid Cooler Corp. of this city.



This Double Shut-off Line Valve with the Kerotest style seal cap is one of the most popular valves among refrigerating engineers combining not only the very desirable double shut-off feature, but also a seal cap which eliminates any chance of leakage. One of the many types of valves and fittings described in the new Kerotest Catalogue.

KEROTEST MANUFACTURING COMPANY
PITTSBURGH, PA.

KEROTEST

*Bellows packless
ANGLE
VALUES*

SERVICE HINTS

By FRANK W. GRAY

Various methods of cutting clean holes through porcelain have been devised by service men. One of these methods is to glue tough paper over the porcelain area through which the hole is to be cut, the cohesion of the paper keeping the porcelain from cracking or splitting while the drill is biting through. Adhesive tape has also been used in the same way.

Some service men prefer to peck out the circumference of the hole with a sharp center punch, after which an emery disk is used to make the actual opening. Conduit reamers with cone-shaped fluted drill heads are also used.

Where sulphur dioxide systems are used in apartment houses and hotels in which excessive height causes some doubt as to whether the liquid refrigerant can be pumped to such a height with the usual tubing installation, certain service engineers advocate the following method of installation:

The receivers are taken off the condensing units and are placed upon the roof of the building, one at the extremity of each liquid line riser, the liquid lines being carried direct to the receivers, and the liquid refrigerant then descending by gravity through a second liquid line into the various tiers of coils installed on the floors below. Several apartments of excessive height in Los Angeles are being successfully operated in this way.

Service men who have had difficulty in balancing up a system, in which flooded coils (or "boilers") are used with direct expansion cooling units operating with automatic expansion valves, will find this suggestion helpful:

In putting such a system into operation the automatic expansion valves should be entirely closed while the flooded coils are being put into operation and the pressurestat adjusted for proper running time. Then, when the flooded system has been run in and line pressures adjusted properly, the automatic expansion valves should be opened one at a time and adjusted to the proper frost line on the coils.

If this procedure is followed, much time will be saved in adjusting the automatic expansion valves to co-ordinate with the flooded system.

Flare nuts are often cracked when subjected to frost action. Likewise, the copper tubing often buckles within the flange of the flare fittings. In both instances leaks develop which are sometimes so small as to be difficult of detection, nevertheless involving a constant loss of refrigerant.

The writer has seen dozens of such cracked fittings and buckled tubes removed from jobs which have been in operation for a long time. By following the precaution described herewith, flare fittings which are exposed to frost action may be protected against cracking, splitting or buckling, and many annoying leaks prevented.

The service man should roll out a strip of hydrolene between his fingers to the thickness of a string of packing; then, using a Prest-O-Lite torch with a sharp flame, this string of hydrolene should be melted into the crevice between the flare fitting and copper tubing of each connection which is exposed to frost. The hydrolene will quickly "set," sealing the fitting permanently against such freezing action.

Nitrogen may be used successfully to test out apartment house systems for leaks before commencing operation. All valves on the "boilers" in the system should first be closed; then the high and low side of the system should be bypassed with a tubing connector joining the liquid and suction lines above the compressor; a 150-pound pressure of nitrogen may then be turned into the system (service men being careful not to exceed this pressure) and all connections tested for leaks with soap suds in the usual manner.

In case a bad leak develops, no objectionable odors result while the leak is being repaired. Carbon dioxide is another gas which may be used with safety for preliminary tests.

Pressurestats may be set to proper adjustment before being installed on the job by using an ordinary bicycle pump, fitted with a flared tubing connection, a short length of copper tubing into which a gauge connection has been teed, and a flare connection on the other end to be fitted to the pressurestat.

Air pressure, measured by the gauge, is used to set the control at the "cutting in" and "cutting out" points desired. This obviates the necessity of a service man remaining on the job to set the automatic control after the system has been fully run in and balanced up.

Where it is necessary to insulate a frosted line of tubing for a certain distance, such as is frequently done in commercial work when connecting one display counter to another, ordinary garden hose, the regular size of which fits tightly over $\frac{1}{2}$ " copper tubing, makes an excellent insulated covering, and saves the time and expense required to fit more expensive insulating material to so small a tube size.

Hydrolene may be used to seal the joints at the extremities against frost action. In fitting the hose over the tubing, the tubing must first be rolled out straight on a level surface, and worked into the length of hose by a turning motion.

A service crew who is noted for its rapid apartment house installation work, use the following method in running tubing lines into the building: All necessary holes are first bored through floors and walls with electric drills.

The liquid and suction tubing lengths are then strapped together with tape, and are pulled through to the basement from the top story of the building. Half of the crew then work on the requisite connections, while the other half hangs the coils in the boxes.

Water valves on water-cooled compressors are sometimes clogged up with accumulations of sediment or scale from the water supply. In localities where such impurities are known to exist in the water, valves with large orifices should be used, and the valves should be flushed out at periodic intervals.

If scale traps (of which several types are for sale on the market) are used, much of the danger of water valve stoppage will be eliminated. The scale trap should, of course, be connected into the water supply pipe ahead of the water valve.

Some service men prefer ordinary Bon Ami to any other agent in polishing and truing up intake valves, discharge valves, seal faces, or any other machine parts upon which fine grinding work may be necessary. It is claimed that Bon Ami has a less corrosive effect than most grinding materials, and polishes to perfection. A cake of Bon Ami may be conveniently carried in the service kit.

In order to avoid taking down compressors whose seals are worn out of round, or are marked on the face, a hardened steel block may be devised, bored to fit over the shaft of the compressor, the polished and hardened face of the block bearing against the face of the seal.

The compressor may then be run, and the seal lapped in against the block, using a grinding compound of the consistency required. Squares of plate glass are also used by service men to lap in the faces of seals, the latter method being applied when the seal assembly has been removed from the compressor.

Sponge rubber matting forms an excellent base for large compressors where quiet, smooth running is desired.

COLD CONSERVATION

The leading refrigerator manufacturers are using our Double Seal, and other gaskets specially made to specifications. We will be glad to figure on your requirements.

BOSLEY'S
Double Seal Gasket
PATENTED

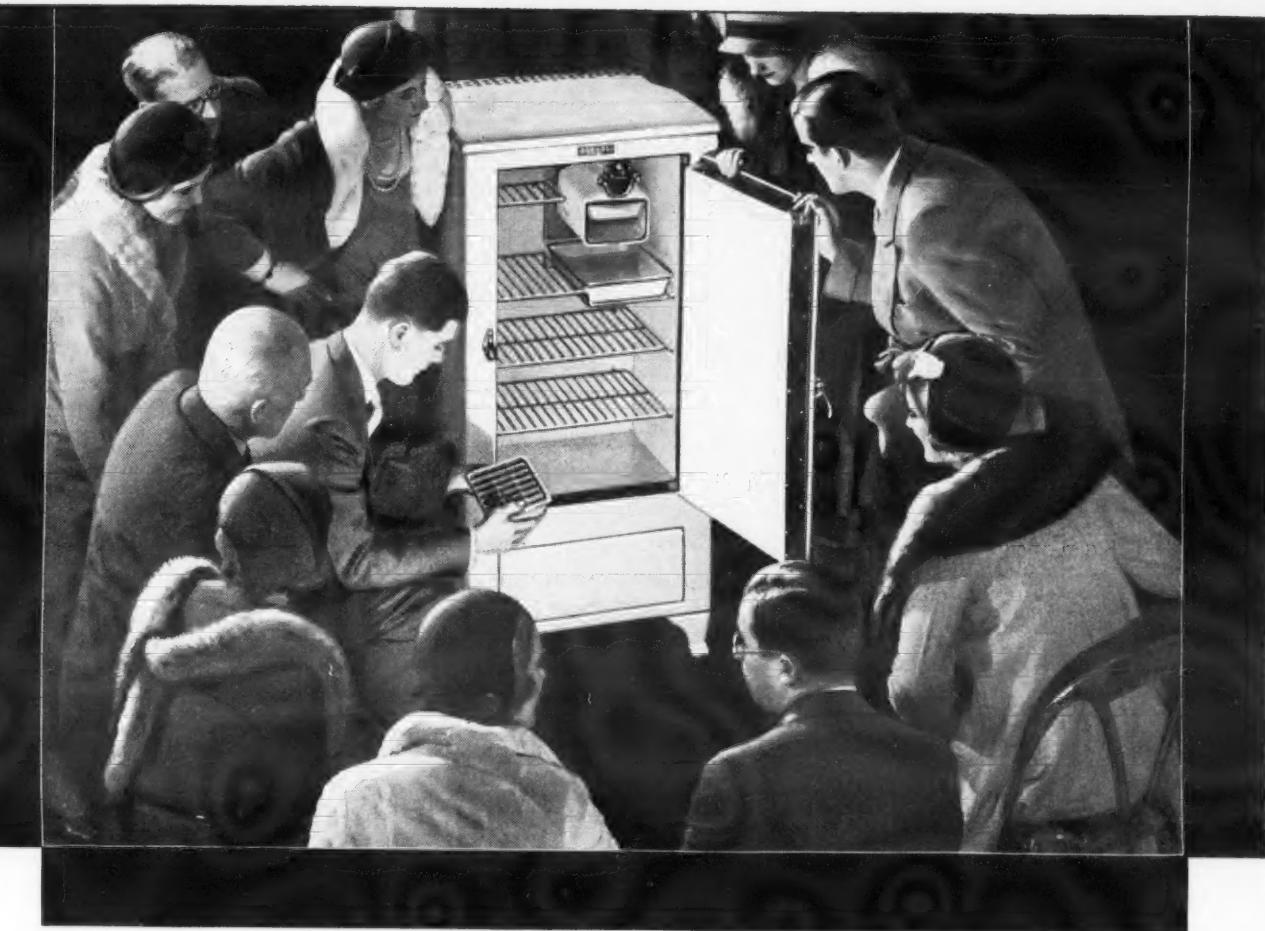
The D.W. BOSLEY COMPANY, 906 Marquette Bldg., CHICAGO, ILL.



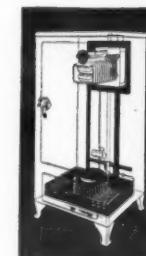
Specialists in
Refrigeration
Gaskets

Simplified Refrigeration

JOIN THE "BIG PARADE"!



How a tremendous rush of business strains our great production facilities to the utmost in order to make prompt deliveries . . .



\$165.00 and up
F. O. B. FACTORY

WHEN the new Servel Hermetic was announced we believed that the great Servel factories could comfortably keep ahead of orders—and that our chief problem was a selling problem.

But the tremendous rush of enthusiasm for Simplified Refrigeration has taxed the capacity of our plant to the utmost.

Dealers from coast to coast were instantly alert to the vastly increased profit possibilities of the electric refrigerator that eliminates costly Service Departments. Already their customers have proved eager for the "care-free" refrigeration of the new Servel Hermetic.

Now we are working night and day to insure prompt delivery

WRITE FOR DETAILS

READ THESE QUICK FACTS

- Hermetically sealed unit
- No kitchen repairs
- No intricate adjustments
- No replacement of parts
- Fewer moving parts
- No moving parts exposed
- Costs less to operate
- Quietest electric refrigerator
- Handy temperature control
- More, usable shelf space
- Beautiful, graceful cabinets
- Flat, usable top
- No installation problem

of every order—and to make certain that our new dealers are thoroughly equipped to take advantage of every minute of the selling season.

We urge you to join the parade! Write immediately for full details of the attractive Dealer Set-Up arranged for the Servel Hermetic.

There's not a minute to waste. It's absolutely necessary that you act at once if you want your Servel Hermetic models in plenty of time to cash in on the great opportunities before us.

SERVEL SALES, INC., EVANSVILLE, INDIANA

The Servel Hermetic protects your profits—makes it possible for you to sell electric refrigeration without maintaining a costly repair shop.

ATTRACTIVE DEALER PLAN

OF THE
SERVEL
HERMETIC

ACTIVITIES OF MANUFACTURERS

KEROTEST USES NEW MACHINE ON VALVES

Pittsburgh—In the neighborhood of 275 refrigerator valve bodies an hour are run off in a new automatic machine in the plant of the Kerotest Manufacturing Co.

Located on the plant's third floor, where many valves and fittings are manufactured for the electric refrigeration industry, this specially-designed machine is the first one of the automatic family which, Kerotest engineers found, performed with the accuracy necessary in refrigeration. Automatic machines did not function with proper precision several years ago.

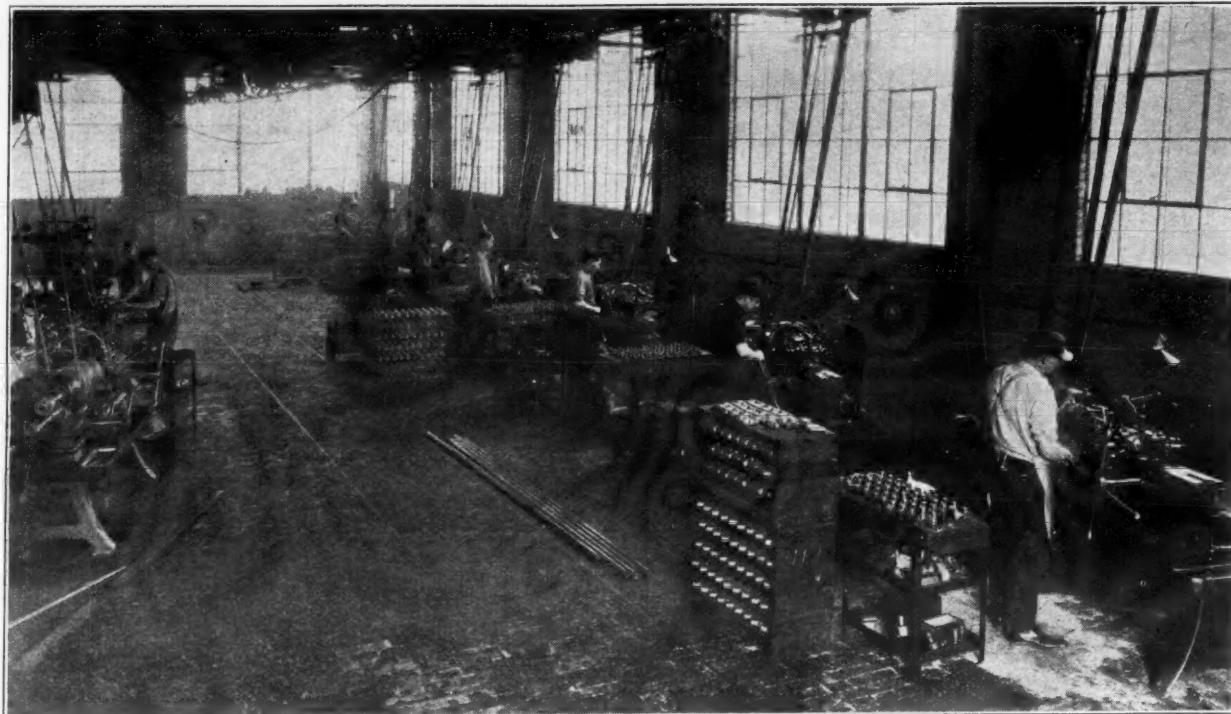
The center of the machine is a turret which revolves in eight shifts. Each time the turret pauses, the one attendant removes the finished valve body that has completed the circle, and clamps in its place a rough brass casting which immediately starts around.

And at each pause of the turret drills, dies and reamers project from the side and above, each accomplishing its operation and withdrawing for the next. The machine can be set to work on valve sizes up to $\frac{3}{8}$ in.

The burden of the refrigerator valve finishing is still done by a battery of light screw machines. The worker at each machine does one operation on each part, placing it on the rack for the next man in line to reach when he is ready.

Lots of 15,000 to 20,000 are the usual runs for this line. The attendants are

Kerotest Valves Coming Down the Line



Stock moves from left to right along this battery of eight screw machines.

men, as are all the workers in the Kerotest plant.

Much of the production equipment in the factory has been installed within the

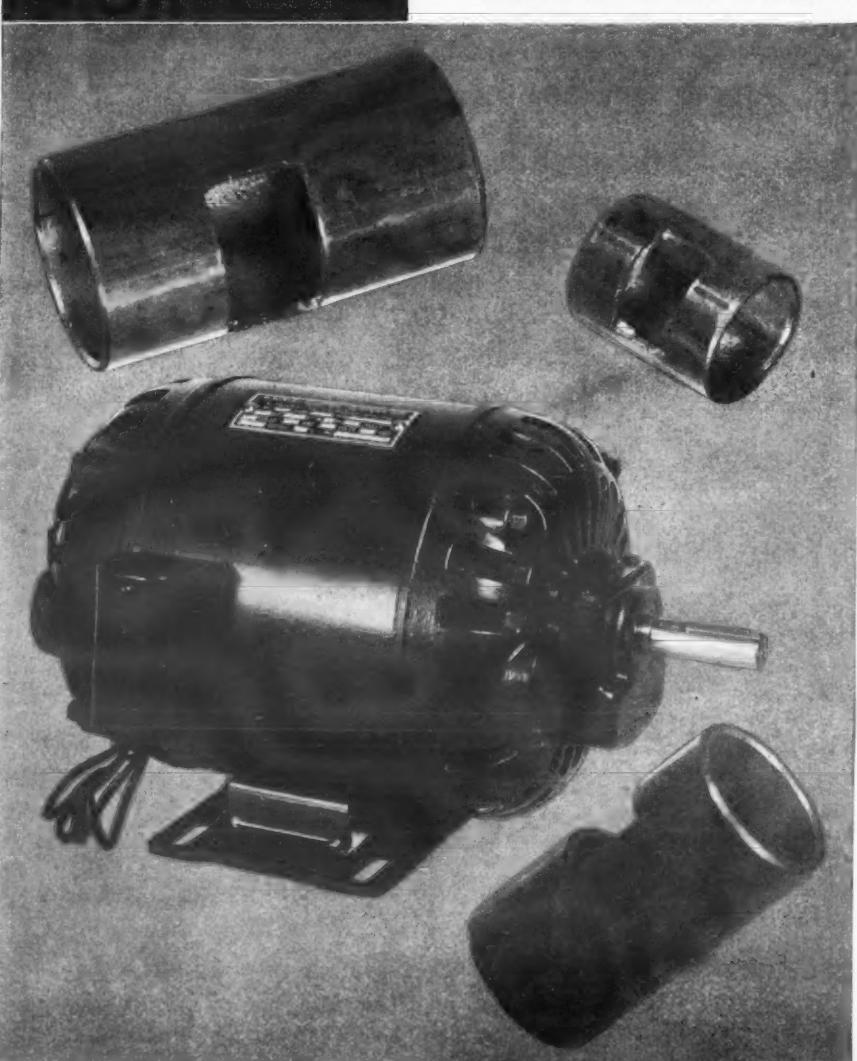
last year or two, and no machine in the whole plant, with the exception of cranes and fixtures, is older than 10 years.

Kerotest's line of heavy steel valves for use in oil fields, pipe lines and refineries comprise a large share of their business. This work is all done on the first floor. The newest of the machinery there is a 16-ton milling machine for milling valves of their largest size, a 20-in. valve weighing 7,020 lbs. A huge multiple drill press nearby drills all the connecting-bolt holes in these valves with one operation.

As with the brass valves, the pipe line valves are all assembled and tested before being shipped—some getting as high as 6,000 lbs. of kerosene pressure.

Bearing Problem Solved

Bearing seizures under severe operating conditions have always been a problem taxing the resources of motor manufacturers. The less the clearance between bearings and shaft, the quieter the motor, but unfortunately the greater the possibility of bearing seizure. As the requirements of extremely quiet motor operation became more exacting, the problem of satisfactory bearings became more and more important. The types of bearings considered satisfactory in the past became exasperatingly troublesome. After several years of extensive tests of all kinds of bearings in commercial use and under development,



Wagner selected a type of bearing which has the necessary wearing qualities and ability to stand excessive pressure—a steel-backed, babbitt-lined bearing which Wagner adopted as standard. The same type of bearing is extensively used in airplane engines and the engines of higher-priced automobiles (where bearing endurance is certainly important), such applications attesting to the exceptional quality of steel-backed, babbitt-lined bearings. The subject of steel-backed, babbitt-lined bearings is fully discussed in a special Wagner bulletin, copy of which will be sent upon request.

Wagner
Electric Corporation

6400 Plymouth Avenue, Saint Louis, U. S. A.

MOTORS	TRANSFORMERS	FANS
SINGLE-PHASE	DISTRIBUTION	DESK WALL
POLYPHASE	POWER	CEILING
DIRECT CURRENT	INSTRUMENT	VENTILATING

S491-2YA

PORCELAIN ENAMEL PROCESS EXPLAINED

By George P. MacKnight
Porcelain Enamel Institute, Inc.,
Chicago

MANY years' experimentation, research, and grueling tests have preceded the present development of the art of porcelain enameling. This finish has armed the manufacturer of electric refrigerators with many sales arguments, and has always been a talking point that is readily understood by the public. It has three definite features that make it well adapted to electric refrigerators: cleanliness, durability, and beauty.

Greenland, Germany, Chile, France, Russia, Southern Asia, and various sections of the United States are the sources of materials used in the manufacture of porcelain enamel.

After being shipped to the porcelain enameling plant, where they are carefully checked and inspected, they are thrown together in proper proportions and thoroughly mixed.

The mixture is taken to a furnace and smelted at a high degree of temperature into a molten mass. When smelted for a sufficient length of time, it is released into a large tank of water and, because of its sudden contraction, is shattered into a mass of fragments. In this state the glass, for it really is glass, is known as "frit."

Frit Next Ground

The frit is then ground in large iron cylinders, known as mills, which contain flint pebbles that pulverize the frit until it reaches a creamy state. When thoroughly ground, it is put through a fine mesh screen and is ready for application. In manufacturing colored enamels and to insure the enamel's retaining a definite fluid consistency, other ingredients are added during the milling process.

In its creamy state, the porcelain enamel is ready for application, but before starting this operation, it is necessary to give considerable attention to the metal base upon which the porcelain enamel is to be applied.

The metal parts come cut, pressed, bent and punched from the fabrication department to the pickling room, where they go through an alkali compound which removes all oils and similar greasy substances. They are then rinsed in cold water and bathed in a mild solution of sulphuric acid.

This eats off any impurities, which may cling to the metal and etches its surfaces, giving the porcelain enamel a better surface into which it is later fused. The metal is rinsed again in water and placed for a few minutes in a solution of hot water and an alkali, usually soda ash, which removes the last trace of acid.

The parts are then sandblasted, an operation which gives them a perfectly clean surface, and are ready for what is known as the ground coat of porcelain enamel.

Pieces Get Ground Coat

Each piece of metal must be dipped into the ground coat separately, after which it goes through a drying room and thence to the furnace room for firing at a temperature of from 1550 to 1625 degrees F.

This is one of the most significant processes in the application of porcelain enamel, for the enamel is fused into the pores of the metal base and becomes a part of it.

After the ground coat (often called "frit" coat), the pieces are taken to spraying rooms, carefully sprayed with liquid porcelain enamel, dried and taken to the furnace for another firing. They are cooled again and given a third application by spraying and returned to the furnace room for a third firing. They are then carefully inspected and are ready to be assembled.

Of course, this procedure may vary in different plants; but it is an example of a typical porcelain enameling operation and the principles given here must be closely followed.

For the benefit of the reader who does not care to remember the technical phases of porcelain enameling, the following definition is offered: "Porcelain enamel is a product made from minerals or inorganic substances, melted under high temperatures to a homogeneous mass, then ground with water and color oxides and fused into the surface of the article to be finished."

CHICAGO FIRM TO HANDLE FAIRMONT ALUMINUM

Chicago—The Fairmont Aluminum Co. of Fairmont, W. Va., has appointed the Central Steel Wire Co. of this city as its selling agent in the middle western territory. In its Chicago, Dayton, and Detroit warehouses Fairmont will carry a complete line of all gauges, sizes, and tempers of bright flat sheet, grey plate, and a stock of aluminum coils.

Muffly Recalls War-Time Shop Experiences

Detroit—In these days of straight production lines, super-fast machine speeds and automatic iron giants rumbling out hundreds of accurately tooled parts under the supervision of a few skilled operators, one marvels at stories like one told by Glenn Muffly, Copeland engineer.

Back in 1917, it seems, the War Department wanted some nine-cylinder airplane engines made up in a hurry. A group of engineers, including Mr. Muffly, was given the plant of the Union Switch & Signal Co., at Swissvale, Pa., and commissioned to make airplane engines on a fancy French Le Rhone design of revolving cylinders; to it Mr. Muffly attributes a goodly number of his gray hairs.

Thirty a day were to be turned out. The engineers began to struggle.

The schedule was carried out all right, but with a working force of some 3,000

people—in which 55 were skilled mechanics and the rest mainly women who had never touched a tool before.

The job of profiling the ribs on the cylinder heads required 150 milling machines working full force. All that remained of the 450 pounds of metal in the rough casting of the crank case when machined down was a paltry 28½ pounds. The cylinder lost considerable weight in the process, too; its 79 pounds casting weight was reduced to a pile of chips and 7½ pounds of cylinder, and the latter figure includes the weight of a cylinder liner and rocker arm support added later.

"They were the days" for production engineers!

Mr. Muffly concludes his tale with a bit of a boast that anyway his engine put out from 7 to 17 more horsepower than the original design rating of the 80 horse engine.

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NEWS AND ACTIVITIES OF SERVICE MEN

SERVICE SOCIETY IS ACTIVE IN BUFFALO

Buffalo—Semi-monthly educational meetings are being held here regularly by the Buffalo Chapter No. 1 of the National Society of Refrigeration Service Engineers. Last fall the group completed the organization of a national society, and although interest has been expressed and negotiations are under way in several parts of the country, no additional chapters have been granted to date.

Officers recently elected for the Buffalo chapter for 1931 are: president, George Krueder of the Kelvinator service department; vice-president, Albert Reinke, also of the Kelvinator service department; secretary, Arthur Lund of the Frigidaire service department; and treasurer, Irvin Parr of the Fedders Manufacturing Co.

Last year's officers automatically became trustees. They are William Powell of Fedders, Milton Boneberg of the Majestic Wholesalers, Inc., and Edward Acker of Fedders.

Recent activities of the chapter included a February 11 meeting which was addressed by Alvin Hulbert, commercial supervisor of Frigidaire, on "Refrigerants, their Manufacture and Action." The following night the chapter held a card party and dance.

Meetings are held on the second and fourth Mondays of the month at Engineers Hall. The first meeting is educational, while the second of the month starts off with business, and concludes with educational discussions.

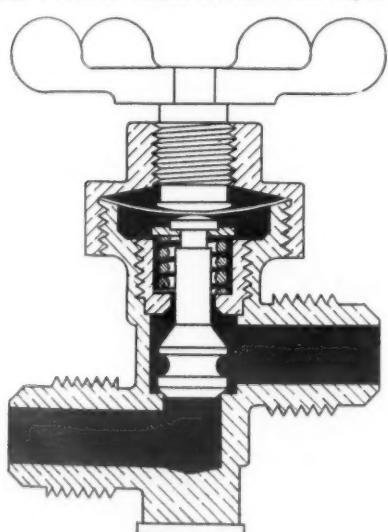
Mr. Boneberg, past president of the group, stressed the fact that the aims of the organization are purely educational, that all the officers give their services free, and that it has no aspects of a labor organization.

One of their plans is to grant all the factory service managers honorary memberships, and have them act as a committee to establish standards of workmanship and personal qualifications for service men.

Kerotest Develops New Valve

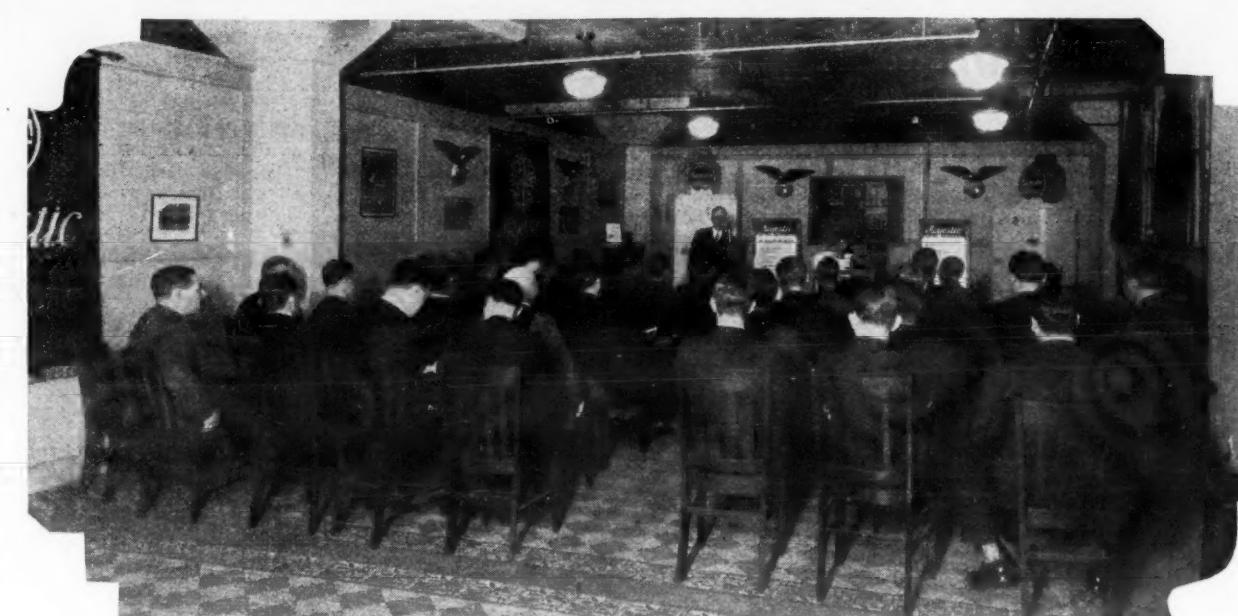
(Concluded from Page 1, Column 5) previous to sulphur dioxide and methyl chloride, Mr. Sweitzer said.

The valves have been tested by the Underwriters Laboratories with hydro-



Packless, solderless, refrigerator valve gen and oxygen, he said, to a pressure of 2,250 lbs.

Other developments made by this company within the past year include its



Training Peirce-Phelps Men in the Selling and Servicing of Refrigerators.

SELLING, SERVICE TAUGHT IN REFRIGERATION SCHOOL

Philadelphia—Selling and servicing of Majestic refrigerators are taught in the weekly school held in the Peirce-Phelps Building, Fifth and Noble Streets, in this city. William Morgan teaches the classes, which run from 25 to 50 in enrollment.

The school operates over a period of three days each week. One interesting feature of it is that occasionally women's classes are held with a woman instructor in charge. As far as is known these are the only classes of this type held exclusively for women in Philadelphia.

MAJESTICS SERVICED RIGHT ON THERMOSTAT

Buffalo—Practically all the service calls that have come in to the Majestic Wholesalers, Inc., here have been from housewives who complained that their refrigerators did not frost up, according to Milton F. Boneberg of the service department.

This has been caused by the machines

operating on such a short cycle that the coils did not have a chance to frost, he said, as the temperature in the cabinet was always low enough.

It was remedied by loosening the thermostat and insulating it slightly from the cooling unit so that the heat conduction was less.

Thus the machine operated on a longer cycle, causing frost to accumulate, he said, and the housewife was satisfied with the frost.

SERVICE MAN TELLS OF TYPICAL CALLS

Philadelphia—L. C. Jonas, refrigerator service man of 1215 Summer St., relates a story which he says is not uncommon in the business.

The telephone rings in the repair shop. Mr. Customer, a stranger on the wire, says: "Send a man up. My refrigerator won't work."

The repairman tries to diagnose the case as much as possible over the phone before the mechanic leaves the shop. The customer has a three-year-old machine which became a little noisy, and so he decided to take the "machinery part" down to the cellar.

With the help of a friend, who was also handy with tools, he began unscrewing and undoing things. He set up the "machinery part" and added a few feet of copper tubing—"Now the thing won't freeze," * * * "Yes, there was a funny smell."

When the phone is hung up in the repairman's office someone makes the remark that he can't understand such foolishness from a grown man. But the very next call was from another customer with exactly the same kind of a case, and the same result.

ALEXANDER IN MEXICO

Detroit—F. M. Alexander, who was formerly in foreign service department of Kelvinator Corp. here, is now with Compania Hydroelectrica, Guanajuato, S. A., Mexico, D. F.

He is in charge of electric refrigeration, and is organizing sales and service for the company's 13 properties.

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ANACONDA Die-Pressed Parts speed up production because their close dimensions minimize machining, and because their smooth, fine-grained surface permits finishing or polishing at much higher rates than are possible with castings.

The absence of spills and blow-holes reduces rejections, which are particularly costly in the case of castings already machined. Anacconda Die-Pressed Parts are gas, air and watertight, and have nearly twice the strength of ordinary castings.

Further information on Die-Pressed Parts on request, or a representative will call at your convenience. Sample parts showing quality and finish gladly forwarded. Quotations may be secured by sending blue-prints, sketches or models of parts desired, stating quantities.

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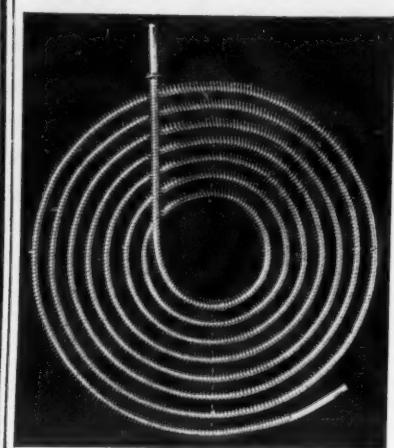
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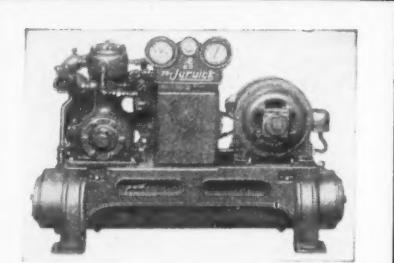


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refrigeration with*

**HYDRO-
THERMAL
GRIDS**

Hydro-Thermal Grid cooling units provide non-frosting refrigeration that preserves the natural moisture of food.

This new invention is a finned, tube-within-a-tube cooling element that takes the place of ordinary cooling coils. Hydro-Thermal Grids provide short gas travel and maximum heat-absorbing surface in minimum space. They provide refrigerating capacity to meet the new requirements for lower temperatures; save space in the refrigerator and supply more heat-absorbing surface per dollar than ordinary coils.

Stock grids are readily combined to form low side cooling units of any size and shape. They eliminate the need for special engineering. You sell a complete refrigerating job on an "over-the-counter" basis.

One New Jersey dealer sold 33 Hydro-Thermal Grids the first week. Some good territories are still open.

**American Engineering
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2420 Aramingo Avenue
Philadelphia, Pa.

PROGRESS OF GAS REFRIGERATION

Rapid Development Pictured By Detroit A.S.R.E. Speaker

Detroit—Development of the domestic gas-fired absorption refrigerator, particularly Electrolux, was traced by F. E. Sellman, vice-president in charge of sales of Electrolux Refrigerator Sales, Inc., in a meeting of the Detroit section of the A. S. R. E. February 16.

After his address, Mr. Sellman answered a number of questions raised in the ensuing discussion among the engineers present.

A news story of this meeting may be found on page one of this issue. Mr. Sellman's talk is presented in full below.

THE speaker first delivered a talk before the New York Section of the American Society of Refrigerating Engineers during the fall of 1926. At the national convention held at White Sulphur Springs during the summer of 1927, gas refrigeration was also discussed. At both of these meetings, as well as a sectional meeting held later in the city of Washington, the general subject of gas refrigeration was more or less dealt with from the angle of theoretical cycles, operation, engineering and construction.

Various articles have also appeared in print covering the subject of gas refrigeration, so that I doubt very much if there are any engineers today who are not familiar with the Electrolux cycle of operation and the general construction of the unit.

I believe the thing that is of most interest to all present is to get accurate knowledge and information as to the progress made by gas refrigeration since its arrival early in 1927.

When I speak of gas refrigeration, I must of necessity limit myself to gas refrigeration as is exemplified by Electrolux. It is perfectly true that there are perhaps available a half dozen to a dozen various types of gas-operated absorption units, but in view of the fact that there is at this time practically only one type of gas refrigerator sold in this country, we must of necessity limit ourselves to the discussion of the Electrolux type of unit.

Several Gas Refrigerators Available

There are several types of gas-fired refrigerators available to the refrigerating industry. There is the Stator machine which uses mercury vapor as the driving force.

A few machines of this type have been built experimentally, but the speaker does not know whether any of them have actually been sold in a merchandising way.

The Frigidaire Corp. brought out and displayed at the American Gas Association's Convention at Atlantic City last October the Faraday machine. Some slight difficulties were experienced with the early model but they expect to be out by early fall with their machine, and expect to actively merchandise their product.

REALISTIC DISPLAY FOODS WILL INCREASE YOUR REFRIGERATOR SALES

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Realistic Display Foods will not melt, soften, and are non-peeling, non-fading, washable and chemically hardened.

A COMPLETE UNIT DISPLAY OF
**27 PIECES PLUS
8 FREE ITEMS**
20.00 F. O. B. Factory

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Factory and Offices
266 Fabian Pl.
Newark, N. J.

the hands of the electric industry. The smaller gas companies, still very hesitant, purchased a few and then, apparently, decided to watch the big fellows.

The years 1927 and 1928 may practically be called the experimental and pioneering era: 1929 and 1930 the era of acceptance, while 1931 ushers in the period of the "demand era."

The year 1930 saw the entry of Electrolux into the semi-commercial line. During that year a Lens-Block chiller for the optical industry was developed and was readily accepted and absorbed by that industry. The year 1931 witnessed the entry of a four-hole ice cream cabinet, a 20 cu. ft. delicatessen and store box, and a utility or buffet cabinet for office purposes, having a capacity of 196 cubes.

Electrolux Line Expanded

When gas refrigeration first was placed on the market, Electrolux Refrigerator Sales only had one model, namely, a 7 cu. ft. box, available. The application of the Electrolux principle of gas refrigeration has been materially extended due to the demand made by the public for refrigerating equipment to meet various conditions, yet operated by the Electrolux cycle.

In 1927 two household models were available: in 1928, six; in 1929, ten; in 1930, thirteen, and the company is continually receiving requests to manufacture special cabinets to meet the various conditions and problems encountered in the field.

Guarantee Extended by Utilities

One of the many advantages of selling through gas utilities is the fact that the utility looks upon the gas refrigerator as a gas-burning appliance, and requires from that appliance the same high standards as regards workmanship and freeness from service.

The gas companies, therefore, feel amply justified in extending to the gas refrigerator exact guaranty of the manufacturer as regards material, and, in addition, extends free labor service as long as the gas refrigerator is on the gas line of the utility. This does not mean that the gas utilities are extending to the refrigerator any unusual guarantee, but that the same guarantee that applies to other equipment has been applied to the gas refrigerator.

This, of course, has made it imperative for the manufacturer to turn out as good a product as material and money can give, for the manufacturer today extends the warranty of two years from date of installation not only for the unit, but for the cabinet and all its controls.

Pioneering Done on Atlantic Seaboard

I believe you will find that this is extending a broader warranty in the refrigeration field than has been done by anyone before. It is perfectly true that many gas utilities have been criticised because of the slowness of their merchandising, and many utilities have been unjustly criticised in this respect.

The early pioneering of gas refrigeration was done along the Atlantic seaboard, particularly in the New York City area. A good many gas companies throughout the country have, during the past three or four years, been selling gas refrigeration, first probably due to a spirit of trying to assist the manufacturer in that they wanted gas refrigeration but yet were afraid of it, but they fully realized that no manufacturer could come out and pioneer gas refrigeration without some assistance from them in the way of purchase and installation.

The early hesitancy of the acceptance of gas refrigeration has been swept away, and today many of the large gas companies have working plans now in operation for a very materially increased refrigeration program during the year 1931.

That this increase in the gas refrigeration program is widespread may be evidenced by the fact that such cities as Boston, New York, Newark, Philadelphia, Baltimore, Washington, Cleveland, Pittsburgh, Chicago, St. Louis, Kansas City, Portland, Seattle, Los Angeles,

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New Orleans, Birmingham and Atlanta have set up quotas tripling their business of former years.

The electric industry has been very aggressive in its merchandising and has been very fortunate in having so many dealers in a town handling electrical appliances. One can hardly pass down the street without finding several concerns handling electrical equipment. It might only be the jeweler with an electrically operated clock; it may be a dry goods store selling waffle irons, hair curlers, washing machines, or any of a dozen different electrical appliances.

The gas industry is not as fortunate. Outside of an isolated plumber, or else perhaps a furniture store selling a few gas stoves, there are no dealers handling gas equipment, and if the gas company wishes to increase its gas-using domestic appliances, it must itself carry on the merchandising program. To do this they must, of course, seek the cooperation of local dealers, and the sale of gas refrigerators through some dealers of the gas company has proven very successful in many of the larger cities.

Predicts Use in Commercial Field

I don't believe that anyone questions the desirability of electricity for means of illumination or for the use of power, but when it comes to heat that is an entirely different question and seems to still belong to the province of the gas industry and that portion is getting bigger and bigger, year by year. I don't think that the time is very far off when gas refrigeration will invade the so-called commercial field of refrigeration, and by that is meant the butcher, the florist, and other uses where refrigeration is now handled by remote installation.

As the merchandising of a gas-operated refrigerator is practically entirely in the hands of the gas utilities, it, of course, became natural for the large utilities located along the eastern seaboard to first actively pioneer and merchandise. New York City, with its very large gas companies, concentrated in a comparatively small area, became the battlefield. New York City, meaning the five boroughs, lent itself particularly well to the adoption of Electrolux, due to the small kitchenettes or kitchens.

Some very interesting figures as to the acceptance of Electrolux in the Bronx and Manhattan and Bronx may be indicated by the figures following. The sales of one gas company dealer in 1928 were 5,345; 1929, 20,273, and 1930, 32,423.

As an illustration of the acceptability of this type of refrigeration, it might be stated that during the year 1930 there were seventy-four new apartment buildings erected in the Bronx. Of these, sixty-two were equipped with Electrolux, which, translated into percentage, means that eighty-five per cent of the buildings were so equipped.

135,000 Units Operating on Special Gases

There are now in operation throughout the country about 135,000 gas refrigerators operated on various types of fuels, namely, manufactured gas approximately 540 B. t. u.'s, natural gas ranging from 900 to 1,300 B. t. u.'s, and bottled compressed gases varying from 2,300 to 3,200 B. t. u.'s.

The question as to water consumption is one that competitive salesmen like to expound and exaggerate. In New York City there was an old refrigeration code passed in 1923, which charged a definite rate for water consumption; this charge, however, being based on the water consumption of large commercial machines.

The water department applies the same type of figures to the small domestic household machine, and the price set where meters are not used but where water is sold on the frontage basis, of \$2.50 per year. The water department in the meanwhile conducted elaborate tests covering seasonal requirements and finally came out with a ruling that they would charge for water when un-metered at a rate of \$2.50 per year, and that this price was equitable and based on actual performances and checks conducted over a period of two years.

Similar tests were conducted in the city of Chicago, and a like price established by the water department of that city. With these two cities coming out with a flat, definite charge for the amount of water used, it should once and for all spike the exaggerated statements made by competitive salesmen.

With the acceptance of Electrolux throughout the country as a whole, the manufacturing facilities of the Servel factory at Evansville were naturally taxed to its utmost. During the past year complete line production has been established, with the result that the factory is now capable of turning out six hundred units per day.

CITY COUNCIL BUYS COOLER

Poughkeepsie, N. Y.—City officials are to drink refrigerated water in the future. The city council has ordered a Kelvinator water cooler from John Van Benschoten, Inc., for installation in the city hall.

NEW REFRIGERATION PATENTS

ISSUED JANUARY 27

1,790,226. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed June 30, 1928. Serial No. 289,550. 11 Claims. (Cl. 62—116.)

A water cooler having a water cooling compartment, a freezing compartment, a food storage compartment, an expansion coil in thermal contact with the freezing compartment at a zone near its expansion point and in thermal contact with the water cooling compartment at a zone farther removed from said expansion point.

1,790,365. ICE CREAM FREEZER ATTACHMENT. Patrick Joseph Brennan, Tuxedo, N. Y. Filed April 22, 1929. Serial No. 357,107. 1 Claim. (Cl. 259—50.)

1,790,373. ICE CREAM FREEZER. James R. Green, Everett, Wash. Filed Jan. 12, 1929. Serial No. 332,041. 1 Claim. (Cl. 259—9.)

1,790,383. DISPLAY COUNTER. Karl S. Kuehn, Minneapolis, Minn. Filed Oct. 28, 1925. Serial No. 65,374. 11 Claims. (Cl. 62—37.2.)

1. A display counter having a rear cooling chamber and a forward display chamber, an imperforate partition as a display shelf dividing the display chamber horizontally to provide a narrow circulation chamber therebeneath and arranged for communication at front and rear respectively with display and cooling chambers, said cooling chamber communicating with said display chamber by another passage to obtain cooling circulation above and below the imperforate partition, said display shelf being loosely supported, a slot being provided to extend the full length of the shelf and display chamber whereby to cause the air to enter as a solid sheet upwardly into said display chamber.

1,790,426. ICE-MAKING APPARATUS. Henry Leonard Kelley and Ralph Kelley, Bakersfield, Calif. Filed July 27, 1928. Serial No. 295,704. 5 Claims. (Cl. 62—160.)

1,790,489. WATER-RECOOLING APPARATUS. William H. Sippel and James E. Farnsworth, Pittsburgh, Pa., assignors, by mesne assignments, to J. H. Morrow, Pittsburgh, Pa. Filed Dec. 6, 1928. Serial No. 324,238. 10 Claims. (Cl. 261—111.)

ISSUED FEBRUARY 3

1,790,757. REGENERATIVE REFRIGERATING APPARATUS. Ernest B. Miller, Baltimore, Md. Filed June 27, 1927. Serial No. 201,928. Renewed Oct. 8, 1929. 26 Claims. (Cl. 62—179.)

1. The method of refrigeration consisting in absorbing vapor from a refrigerant into a solid porous adsorbent, removing a portion of the heat of absorption from said adsorbent and using said heat to activate adsorbent material previously used.

1,790,993. AIR COOLER AND HUMIDIFIER. Ralph D. Matteson, Boise, Idaho, assignor to Matteson Air Cooler Company, Boise, Idaho, a Corporation. Filed Dec. 31, 1929. Serial No. 417,711. 6 Claims. (Cl. 261—104.)

1,791,022. APPARATUS FOR THE PREPARATION OF COOLING BRINES. Oscar Dahl and Erik Arnfinn Hallgrím Kjörstad, La Rochelle, France. Filed Jan. 13, 1928. Serial No. 246,472, and in France July 27, 1927. 6 Claims. (Cl. 62—101.)

1,791,023. REFRIGERATING PLANT. Oscar Dahl and Erik Arnfinn Hallgrím Kjörstad, La Rochelle, France. Filed Jan. 13, 1928. Serial No. 246,473, and in France July 27, 1927. 7 Claims. (Cl. 62—104.)

1. In a plant for refrigerating goods of the character described, particularly on board ships, a tightly closed receptacle adapted to contain the goods to be refrigerated, means for circulating a cooling brine downwardly through said receptacle, and gas discharge means at the top of said receptacle for continuously discharging the gas disengaged from the brine in operation, whereby said receptacle may be kept completely filled with brine.

1,791,032. APPARATUS FOR THE PREPARATION OF COOLING BRINE. Erik Arnfinn Hallgrím Kjörstad, La Rochelle, France. Filed Nov. 18, 1927, Serial No. 234,163, and in France Dec. 1, 1926. 7 Claims. (Cl. 62—101.)

1,791,041. COMBINED REFRIGERATOR AND ICE CREAM FREEZER. Albert F. Sawyer, Haverhill, Mass., assignor to Irving L. Keith, Haverhill, Mass. Filed Sept. 27, 1929. Serial No. 395,560. 3 Claims. (Cl. 62—114.)

1. A freezing device of the character described comprising a container having a closure at its top and a stirring de-

vice therefor, a receptacle within which said container is supported, the sides of said receptacle being connected to the sides of the container adjacent the closure thereof, to provide a liquid tight chamber about the container, said chamber having a liquid therein, the freezing point of which approximately corresponds to the freezing temperature required in the container, and a refrigerating device having a recess adapted to receive said receptacle and to reduce the temperature of the liquid in said chamber at the desired point.

1,791,121. COMPRESSION PIPE COUPLING. Irving Cowles, Chicago, Ill., assignor to Union Bank of Chicago, Chicago, Ill., a Corporation of Illinois, trustee. Filed Apr. 26, 1926. Serial No. 25,873. 11 Claims. (Cl. 285—66.)

1,791,225. THERMOSTATIC SWITCH. William A. Rankin, Toledo, Ohio, assignor to Robeson-Rochester Corporation, Rochester, N. Y., a Corporation of New York. Filed Nov. 7, 1928. Serial No. 317,743. 10 Claims. (Cl. 200—138.)

1,791,296. EVAPORATOR. Oscar H. Wurster, Chicago, Ill. Original application filed Nov. 22, 1924. Serial No. 751,464. Divided and this application filed May 28, 1927. Serial No. 195,125. 2 Claims. (Cl. 159—27.)

1. In an evaporator, the combination with a calandria comprising a cylindrical member having an external boss made integral therewith, the axis of said boss being inclined relative to the axis of said cylindrical member, of a separator for discharging liquid from vapor, an inclined pipe communicating with said calandria through said inclined boss, said pipe also communicating with the interior of said separator, and a shield made integral with the walls of said cylindrical member and arranged over the open end of said pipe for protecting the open end of said pipe and boss.

1,791,436. VALVE FOR CONTROLLING GASES AND LIQUIDS. Reimund Ullrich, Berlin, Germany. Filed Feb. 29, 1928. Serial No. 258,052, and in Germany Nov. 2, 1925. 4 Claims. (Cl. 73—1.)

1,791,441. REFRIGERATING SYSTEM. John C. Bertsch, Montreal, Quebec, Canada. Filed Dec. 7, 1928. Serial No. 324,354. 7 Claims. (Cl. 62—179.)

1. A three pressure absorption process of refrigeration, comprising continuously expelling vapor from a strong solution of refrigerant by heat at a pressure superior to the condensing pressure and condensing the same; vaporizing the resulting fluid and absorbing the same by a weak solution in the presence of an inert gas at a pressure inferior to the condensing pressure, thus forming rich and poor gaseous mixtures, respectively; circulating said solutions by the potential energy of the expelled vapor prior to its condensation and said mixtures by the residual kinetic energy of the circulating weak solution and liquid fluid; said three pressures being balanced by hydrostatic columns, namely: the superior and condensing pressures by a column of hot strong solution, the superior and inferior pressures by a column of cold weak solution, and the condensing and inferior pressures by a column of liquid fluid.

1,791,502. APPARATUS FOR THE PREPARATION OF COOLING BRINES. Oscar Dahl and Erik Arnfinn Hallgrím Kjörstad, La Rochelle, France. Filed Jan. 13, 1928. Serial No. 246,472, and in France July 27, 1927. 6 Claims. (Cl. 62—101.)

1,791,503. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Nov. 15, 1923. Serial No. 675,006. Renewed Apr. 17, 1928. 10 Claims. (Cl. 62—116.)

1. In a refrigerating apparatus, a condenser comprising a continuous conduit bent upon itself into a tortuous passage to form upper and lower relatively wide sections and a plurality of relatively narrow intermediate sections, said intermediate sections being spaced to provide an opening adapted to receive a drive shaft.

1,791,505. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Nov. 15, 1923. Serial No. 675,006. Renewed Apr. 17, 1928. 10 Claims. (Cl. 62—116.)

9. In a mechanical refrigerator, a cabinet having a cooling compartment, a drain pipe for said compartment leading through said wall, a fluid circulating apparatus, and a duct connecting said unit and apparatus, said duct passing through said wall within the drain pipe.

1,791,515. ABSORBENT FOR REFRIGERATING APPARATUS. Harry F. Smith, Dayton, Ohio, assignor to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed May 30, 1929. Serial No. 367,156. 19 Claims. (Cl. 252—5.)

1. An absorbent for refrigerant in refrigerating apparatus of the absorbent type consisting of a powdered solid ma-

terial having the property of entering into chemical combination with the refrigerant, the particles changing volume when so combining with the refrigerant, the particles of powder being individually wet and bound together with a thin film of liquid, said liquid being permeable to the refrigerant and stable throughout the temperature and pressure range to which the absorbent is subjected.

17. An absorbent for ammonia in refrigerating apparatus of the absorption type consisting of a mixture of strontium chloride and lithium nitrate.

1,791,528. REFRIGERATING APPARATUS. Harry B. Hull, Dayton, Ohio, assignor, by mesne assignments, to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware. Filed Nov. 19, 1929. Serial No. 408,233. 4 Claims. (Cl. 200—83.)

1,791,585. COMPRESSOR. Austin E. Elmore, Los Angeles, Calif. Filed Apr. 30, 1929. Serial No. 359,213. 7 Claims. (Cl. 230—205.)

1,791,644. REFRIGERATING APPARATUS. Francis Joseph Kleinhans and Herman A. Brandt, Buffalo, N. Y., assignors to Arco Vacuum Corporation, New York, N. Y., a Corporation of Delaware. Filed May 24, 1927. Serial No. 193,830. 22 Claims. (Cl. 62—90.)

1. In an apparatus of the character described, a cooling chamber adapted to contain an aqueous liquid, a freezing chamber within said cooling chamber, and evacuating means to produce simultaneously a low sub-atmospheric pressure in said chambers.

1,791,751. DEHUMIDIFIER AND APPARATUS FOR AIR TREATING. Thomas Chester, Pittsburgh, Pa. Filed Jan. 30, 1928. Serial No. 250,489. 5 Claims. (Cl. 261—115.)

1,791,772. PROCESS AND APPARATUS FOR CONTINUOUS MANUFACTURE OF ICE CREAM. Clarence W. Vogt, Louisville, Ky., assignor to Vogt Instant Freezers, Incorporated, Louisville, Ky., a Corporation of Delaware. Filed June 2, 1927. Serial No. 196,050. 19 Claims. (Cl. 62—174.)

1. A process of producing frozen substances which consists in directing a liquid along a predetermined path, discharging the liquid through nozzles in direct association with a jet of air to effect the atomization thereof, exposing the resulting product to frigid surfaces, and removing the congealed substance from said surfaces.

16. A process of producing a frozen and flavored substance which consists in continuously congealing a stream of mix and continuously introducing fruits or their concentrates at a measured rate into the congealed mix.

1,791,773. MACHINE FOR PROCESSING MATERIALS. Clarence W. Vogt, Louisville, Ky., assignor to Vogt Instant Freezers, Incorporated, Louisville, Ky., a Corporation of Delaware. Filed Oct. 8, 1927. Serial No. 224,992. 14 Claims. (Cl. 62—114.)

1,791,774. PROCESS AND APPARATUS FOR FREEZING ICE CREAM AND THE LIKE. Clarence W. Vogt, Louisville, Ky., assignor to Vogt Instant Freezers, Incorporated, Louisville, Ky., a Corporation of Delaware. Filed Oct. 21, 1927. Serial No. 227,665. 11 Claims. (Cl. 62—114.)

1,791,814. COOLING APPARATUS. George A. Hillery, New Orleans, La. Filed May 15, 1928. Serial No. 277,922. 1 Claim. (Cl. 261—116.)

1,791,850. FRIGID UNIT. Charles A. Stickney, Rockford, Ill. Filed Nov. 4, 1927. Serial No. 230,958. 13 Claims. (Cl. 62—115.)

1. A device of the character described comprising in a single unit a hot section in the form of a finned cylinder of a certain diameter providing a condensing chamber therein, and a cold section in the form of another finned cylinder contiguous and coaxial with the other cylinder and of a smaller diameter providing an expansion chamber therein, there being an annular shoulder formed at the junction of the two cylinders for supporting said unit on a refrigerator cabinet whereby the hot section is exposed outside the cabinet and the cold section is exposed inside the same, and there being means providing restricted communication between the sections to pro-

vide a cooling effect.

1,792,227. METHOD AND MEANS FOR REGULATING CONTINUOUSLY WORKING ABSORPTION REFRIGERATING MACHINES. Leo Kuhl, Berlin-Charlottenburg, Germany, assignor to Siemens-Schuckertwerke Aktiengesellschaft, Berlin-Siemensstadt, Germany, a Corporation of Germany. Filed June 19, 1928. Serial No. 286,586, and in Germany June 22, 1927. 2 Claims. (Cl. 62—5.)

1,792,230. ACCELERATOR FOR TEMPERATURE CONTROL. John M. Larson, Chicago, Ill., assignor to National Regulator Co., Chicago, Ill., a Corporation of Illinois. Filed June 14, 1926. Serial No. 115,701. 7 Claims. (Cl. 236—82.)

1,792,368. PRECOOLING SYSTEM. Norman H. Gay, Los Angeles, Calif. Filed Oct. 11, 1929. Serial No. 398,939. 7 Claims. (Cl. 62—24.)

WE BUY
New and Used ELECTRIC
REFRIGERATORS
In Any Condition

duce refrigeration in the cold section in the usual way, means for continuously supplying compressed refrigerating medium to the hot section and exhausting expanded refrigerating medium from the cold section, and means whereby the two chambers may be automatically placed in comparatively unrestricted communication whereby to defrost the walls of the expansion chamber.

1,791,896. ADJUSTMENT SCALE FOR SWITCHES. Malcolm E. Henning, Des Moines, Iowa, assignor to Penn Electric Switch Co., Des Moines, Iowa, a Corporation of Iowa. Filed Nov. 19, 1929. Serial No. 408,233. 4 Claims. (Cl. 200—83.)

1,791,958. COMPRESSOR. Austin E. Elmore, Los Angeles, Calif. Filed Apr. 30, 1929. Serial No. 359,213. 7 Claims. (Cl. 230—205.)

1,791,964. REFRIGERATING APPARATUS. Francis Joseph Kleinhans and Herman A. Brandt, Buffalo, N. Y., assignors to Arco Vacuum Corporation, New York, N. Y., a Corporation of Delaware. Filed May 24, 1927. Serial No. 193,830. 22 Claims. (Cl. 62—90.)

1. In an apparatus of the character described, a cooling chamber adapted to contain an aqueous liquid, a freezing chamber within said cooling chamber, and evacuating means to produce simultaneously a low sub-atmospheric pressure in said chambers.

1,792,136. REFRIGERATING APPARATUS. George Andresen, Chicago, Ill., assignor to W. B. Parkyn, Chicago, Ill. Filed Apr. 25, 1927. Serial No. 186,311. 15 Claims. (Cl. 62—126.)

13. The method of evaporating liquid refrigerant, covered by a layer of oil, in the production of refrigerating temperatures, which consists in conducting the gas evaporated from the body of refrigerant away from the body thereof through a course such that the gas-flow is not subject to impedance by the layer of oil.

1,792,213. THERMOSTATICALLY-CONTROLLED REDUCING VALVE. Clayton A. Dunham, Glencoe, Ill., assignor to C. A. Dunham Company, Marshalltown, Iowa, a Corporation of Iowa. Filed Aug. 20, 1928. Serial No. 300,737. 18 Claims. (Cl. 236—92.)

1,792,227. METHOD AND MEANS FOR REGULATING CONTINUOUSLY WORKING ABSORPTION REFRIGERATING MACHINES. Leo Kuhl, Berlin-Charlottenburg, Germany, assignor to Siemens-Schuckertwerke Aktiengesellschaft, Berlin-Siemensstadt, Germany, a Corporation of Germany. Filed June 19, 1928. Serial No. 286,586, and in Germany June 22, 1927. 2 Claims. (Cl. 62—5.)

1,792,230. ACCELERATOR FOR TEMPERATURE CONTROL. John M. Larson, Chicago, Ill., assignor to National Regulator Co., Chicago, Ill., a Corporation of Illinois. Filed June 14, 1926. Serial No. 115,701. 7 Claims. (Cl. 236—82.)

1,792,368. PRECOOLING SYSTEM. Norman H. Gay, Los Angeles, Calif. Filed Oct. 11, 1929. Serial No. 398,939. 7 Claims. (Cl. 62—24.)

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New and Used ELECTRIC
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In Any Condition

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Type of Motor, Size of Box, Etc.
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3-8 in. I. P. Inlet and Outlet.

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Fountains

EXPOSED TYPE
Chrome plated union inlet
3-8 in. I. P. Outlet. C-1300 H
2-prong handle. C-1300 L
4-prong handle. C-1300 L
Lever Handle

THE D. A. EBINGER SANITARY MFG. CO.
COLUMBUS, OHIO

N. Y. WESTINGHOUSE DISTRIBUTOR NAMED

New York City.—The Times Appliance Co., Inc., has been named distributor of Westinghouse refrigerators covering the eleven counties comprising the Greater New York area.

The new distributor has formed a subsidiary company, Allen-Ingraham, Inc., to handle retail sales in the four boroughs—Manhattan, Bronx, Brooklyn and Queens. Retail show rooms have been opened at Fourth Ave. and 20th St., New York, and at 166 Atlantic Ave., Brooklyn. Additional show rooms will soon be opened in Queens and the Bronx.

E. B. Ingraham, president of Allen-Ingraham, Inc., announces the following appointments: Willard Hall, vice-president and general manager; Robt. C. Hill, sales manager; J. B. Rockhill, wholesale sales manager; G. C. Abbott, installation and service manager; E. A. Bonneville, sales promotion manager; and W. R. Henshaw, district sales manager.

Dealers have been appointed covering that portion of the Times Appliance territory not covered by the Allen-Ingraham organization.

NEW OFFICERS ELECTED BY NEW YORK EDISON CO.

New York City.—At the organization meeting of the board of Directors of The New York Edison Co., held Feb. 17, following the meeting of stockholders and election of directors last week, Floyd L. Carlisle, chairman of the board of the Niagara Hudson Corp., was elected chairman of the board, and Frank W. Smith was elected a vice-president of the company. Matthew S. Sloan was re-elected president.

Mr. Carlisle has been a member of the New York Edison board of directors and of the Consolidated Gas Co. board of trustees since May, 1930.

Mr. Smith is vice-president and general manager of the United Electric Light & Power Co., and chairman of the board of the New York & Queens Electric Light & Power Co., two of the five companies composing the New York Edison System, and vice-president and a director of the Brush Electric Illuminating Co. He has been active in the electric light and power industry for more than fifty-one years.

KELVINATOR HAS NEW MIDWEST DISTRIBUTOR

Rock Island, Ill.—The territory formerly covered by the Kelvinator-Interstate Co. here has been taken over by the Midwest-Timmermann Co., newly appointed distributor at Dubuque and Davenport, with a subsidiary, the L. P. Courshon Co., at Mason City, Iowa.

The territory now covered by this company includes northern Illinois, southwestern Wisconsin, and northern and southeastern Iowa.

G. J. Timmermann is president of the Midwest-Timmermann Co. B. J. Kerper will have charge of the Davenport branch, and L. P. Courshon will manage the L. P. Courshon Co.

Otto Niemann, former president of the Kelvinator-Interstate Co., will be general manager of the refrigerator department of the Midwest-Timmermann Co.

The service department of the new company is headed by Charles Rowe, former service manager of the Kelvinator-Interstate Co.

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550 Maccabees Building
Detroit, Michigan

Gentlemen: Please enter my subscription to ELECTRIC REFRIGERATION NEWS.

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2-25-31

Illuminated Glass Cubes Lend Arctic Touch



Illuminated glass cubes are employed by the Union Light & Power Co., St. Louis, in many of its refrigeration displays. The white glass cubes are inscribed with large letters to spell out the name "Yukon." They are offered in several sizes by the Cubelite Division of General Display Case Co., New York City.

WESTINGHOUSE FACTORY PUT ON FIVE-DAY WEEK

East Pittsburgh, Pa.—Beginning March 1, all the works and offices of the Westinghouse Elec. & Mfg. Co. will omit Saturday operations, except as involved in maintaining adequate service with customers, according to an announcement by President F. A. Merrick.

Mr. Merrick states that the plan to be followed for the immediate future is to shorten the working week to the extent represented by the work normally required on Saturday throughout the company.

As this reduction of service represents approximately 10 per cent, that amount of reduction will apply to all salaried employees. Similar arrangements have already been put into effect as to employees on an hourly basis.

This arrangement, according to Mr. Merrick, is solely an emergency measure to spread the work through this period of business depression, and that normal arrangements will be reinstated with the advent of normal times.

COPELAND DISTRIBUTOR APPOINTED IN BOSTON

Boston—The Appliance Engineering Co. of 624 Beacon Street has been appointed exclusive distributor for the Copeland line of electric refrigerators in the New England territory, excluding Connecticut. Headed by T. A. Terhune, this company, which was formed in 1929, is centrally located at Kenmore Square in Boston, and has a large showroom, which will be given over to the display of new Copeland models.

Mr. Terhune has mapped out an extensive merchandising and advertising program for the Copeland dealers. Nine carloads of Copeland household and commercial systems were recently ordered by this company, according to W. H. Lyon, factory representative.

Parker Rust Proof Profits Go Up

Detroit—The Parker Rust Proof Co. reports a net profit of \$455,220 for 1930, as compared with \$378,251 for 1929, and \$320,391 for 1928.

Balance sheet at the close of 1930 showed current assets of \$515,082 against current liabilities of \$151,680. Surplus was \$901,826.

Cash dividends of \$328,700 were paid in 1930, as compared with \$234,284 in 1929 and \$162,161 in 1928.

President W. M. Cornelius points out in his report that the number of users of the company's processes has increased, that a larger volume of tank capacity has been installed in customers' factories and that sales of chemicals have been greater.

Licensed customers in 1930 numbered 314, against 270 in 1929 and 234 in 1928. Customers treating vat capacity in gallons was 889,286 in 1930, against 497,940 in 1929, and 211,943 in 1928.

Mr. Cornelius states, "The installed tank capacity represents potential consumption of our products."

"During 1930 the consumption was 3,418 pounds of products per gallon of customer tank capacity, while the average for the previous three years was 5,217 pounds per customer."

"This falling off in consumption per unit of customer equipment reflects the effect of the depression upon our sales. Our increased profits notwithstanding depression were brought about by an expansion of the field of our operations through the substitution of our processes for other metal finishes."

REQUESTS FOR INFORMATION

Readers who can be of assistance in furnishing correct answers to inquiries, or who can supply additional information, are invited to address Electric Refrigeration News, mentioning query number.

Query No. 411—Will you kindly quote us on five or six automatic stock check valves, $\frac{1}{4}$ " size, for use on liquid sulphur dioxide.

"We have some installations where a break in a sulphur dioxide line would prove disastrous. The line pressure is approximately 100 lbs. and the normal flow is slight.

"The liquid sulphur dioxide is as dry as possible to obtain it commercially, and there is little or no corrosion possible.

"This valve is to be something on the order of an automatic stop valve which will automatically close with an 8 or 10 lb. pressure reduction on the outlet side, as in case of a bursted pipe.

"Possibly this valve will have to be built entirely special for the job if it can be made at all, as the smallest valves we are familiar with are $2\frac{1}{2}$ " for this type of service and are customarily used on steam and air lines to prevent the discharge of lines and vessels in case of a rupture. Please send proposition in triplicate."

DEALER APPOINTED

South Norwalk, Conn.—The Wallace H. Vermilya Corp., 50 North Main St., has been appointed Frigidaire representative in this territory.

AIR CONDITIONING UNIT ORDERED BY MAY STORE

Cleveland—Installation of a \$250,000 "manufactured weather" plant by the Carrier Engineering Corp. of Newark, N. J., was started on Feb. 16 for the May Co., large department store here, according to an announcement by Robert H. Gries, assistant general manager of the Cleveland company.

The system, which the May Co. is reported as the first Cleveland department store to adopt, will be completed and in operation about the first of May. Providing 400 tons of refrigeration per day, the system will cool the basement and street floor of the building.

H. B. Matzen, representative of the Carrier Co., states that the system will be in operation, both winter and summer. Over 200,000 cu. ft. of conditioned air will be distributed to the two floors every minute.

BUFFALO COMPANIES SELL REFRIGERATORS, RADIOS

Buffalo—Next-door neighbors on Mohawk St. here—H. B. Alderman, Inc., and McCarthy Bros. & Ford, distributors of Sparton and Westinghouse radios, respectfully—have just taken on refrigeration.

H. B. Alderman, with branches in Syracuse and Rochester, and distributors of the Sparton radio for several years, have been named distributors for the Leonard electric refrigerator. They have five dealers in Buffalo, and others in Central and Western New York. H. B. Alderman is president, and R. H. Davison sales manager.

McCarthy Bros. & Ford, next door, operate an electrical contracting business, and have been general distributors for Westinghouse products since they started business 33 years ago. They do a wholesale business with 25 dealers in nearby counties, and sell retail in Buffalo.

ILLINOIS UTILITY SELLING FRIGIDAIRE, ELECTROLUX

Springfield, Ill.—The Illinois Power Co., 315 East Capitol Ave., is now distributor for both the Frigidaire and Electrolux refrigerators.

The Capitol City Paper Co., Fourth and Madison Sts., formerly handled the Electrolux, but early this year the distribution of this refrigeration was taken over by the Illinois Power Co.

The J. A. Van Natten Hardware Co., 415 East Monroe Street, was distributor for Frigidaire until about two weeks ago when the utility company took the distribution. The Van Natten Hardware Co. will continue as a Frigidaire dealer.

DIRECTORY CORRECTION

In the cabinet specifications appearing on page 27 of the directory section, Jan. 14 issue of the News, the Lorillard Refrigerator Co., manufacturer of cabinets, was listed as having its main office at 1200 W. 35th St., Chicago. Lorillard's headquarters are at Kingston, N. Y., while the above address is that of the Chicago branch office.

Also, in addition to interior finish of porcelain, mentioned in the specifications, Lorillard offers refrigerators with interiors of galvanized iron and Monel metal.

THE CONDENSER

ADVERTISING RATE fifty cents per line (this column only).

SPECIAL RATE is paid in advance—Positions Wanted—fifty words or less, one insertion \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each. All other classifications—fifty words or less, one insertion \$3.00, additional words six cents each. Three insertions \$8.00, additional words sixteen cents each.

POSITIONS AVAILABLE

WANTED experienced refrigerating sales engineers to sell Frick Ammonia and CO₂ refrigerating machinery from one-half to thirty tons; also serve commercial line in Pittsburgh district. Must be capable of making estimates, layouts, and specifications for dairies, ice cream plants, packing houses, markets, etc. In reply give experience, age, married or single. Good salary and commission to right man. Box No. 304.

POSITIONS WANTED

REFRIGERATION machine designer seeks new connection in broader field in the manufacture of units for refrigerated automobile truck or railroad car installation. Also experienced in gasoline-engine and electric motor design incidental to such units. Capable of shouldering responsibility. Box No. 312.

SALES PROMOTION—Young woman, five years' experience in electric refrigeration field with distributors of two of leading manufacturers. Expert in handling all details pertaining to sales, direct mail, dealer activities. Willing to accept position in any city. Box 317.

YOUNG man, married, at present profitably employed, desires position with growing power company or public service corporation in the capacity of refrigeration expert. Plenty of technical knowledge, but have not lost the ability to work. Two years' experience in General Electric factory. Will locate anywhere. Good references if desired. Box 319.

HOMESTEAD Economist, specialist in electrical appliances and food. This is an opportunity to secure the services of a woman with an unusual record of accomplishment. Familiar with every phase of product marketing. Experienced laboratory worker, writer, lecturer and demonstrator. Radio Experience. Box 318.

DISTRIBUTORSHIP WANTED

WELL financed organization experienced in the refrigeration field wants greater New York, or Bronx only, distributorship for reliable apartment house model refrigerator to be sold wholesale to builders and apartment house owners. Must be within all competitive prices. P. F. Thau, 2247 White Plains Ave., New York, N. Y. Estabrook 3592.

FILTRINE FILTERS for ELECTRIC WATER COOLERS GUARANTEED
FILTRINE MFG. CO.
49 Lexington Ave. - Brooklyn, N. Y.
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Metal Stampings Unit Bases and Guards Household Refrigerator Metal Panels—Exterior or Inside Panels and Food Compartments. Louvered Panels—Special Trays or Panels. Water Cooler Panels.

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Door and Frame Insulating Strips. Gliders for Refrigerator Legs. Top Hole Sections, Lid Collars, Sleeves, Brine Hole Stoppers for Ice Cream Cabinets, etc. Specializing in Parts Made to Customer's Design.

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Refrigerated Food Section

ELECTRIC REFRIGERATION NEWS

Registered U. S. Patent Office.

In Two Parts—Part 2

The business newspaper of the refrigeration industry

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TWO DOLLARS PER YEAR

GENERAL FOODS PLACES OFFICIAL O. K. ON NEW FROZEN FOODS CASES

NEW UNIVERSAL FREEZER OFFERS SELECTIVE CASE

Ice Cream Freezer-Storage Cabinet Incorporates Serving Feature

By John T. Schaefer

Pittsburgh—Ice cream freezing, hardening, and selective serving are combined in the new vertical combination freezing and storage cabinet which the Universal Freezer Corp. is now offering to merchants who want to make their own ice cream.

The new combination freezer-storage unit consists of an upright hardening cabinet kept at zero temperatures by electric refrigeration, and their standard freezer slightly modified to match the hardening cabinet which stands at its left.

The hardening cabinet has three compartments, one above another. In the lower are placed regular five-gallon cans of ice cream; in each of the top two compartments are eight drawers, in which packaged ice cream may be kept.

The advantage of the new machine, J. V. Larson, sales manager of the Universal Freezer Corp., points out, is that with it the merchant can make his own ice cream in as many as 16 different flavors and combinations, package it, and store it in the readily accessible hardening drawers.

When a customer inquires about ice cream he may be shown the different kinds offered by simply swinging open the top two doors.

The merchant can make as little or (Concluded on Page 7, Column 5)

HOLLYWOOD TAVERN USES SPECIAL REFRIGERATORS

Hollywood, Calif.—Al Levy's Tavern, a new restaurant on Vine St. here, offers a number of innovations in food storage arrangements.

Of particular interest is the bulk storage box in the basement, equipped with drawers 2 ft. wide, 1 ft. deep, and 3 ft. long, used entirely for fish. It was intended to use cracked ice along with the regular cooling facilities in this refrigerator, which is one of four built specially by the General Electric Co. for the restaurant. The management now reports that it has not been found necessary to add the cracked ice.

The installation, which approximates \$10,000, includes four special General Electric refrigerators measuring 11 ft. long, 4 ft. deep and 6 ft. high, each equipped with two units.

Two of the refrigerators in the kitchen serve, one as a pantry box, the other as a chef's meat box, while the third bulk storage box, housed with the fish refrigerator in the basement, is used for vegetables and kindred preparations.

In addition, there is a 60 cu. ft. box in the restaurant's bakery, equipped with one unit, and on each side of the range in the kitchen there is a 27 cu. ft. short order box.

The commercial department of the George Belsey Co., Ltd., Los Angeles, sold this restaurant refrigerator installation.

ANHEUSER - BUSCH BUYS YEAST-COOLING MACHINE

Bridgeport, Conn.—A yeast-cooling refrigerator in the plant of Anheuser-Busch, Inc., 1374 Park Ave., has been equipped with a Frigidaire N compressor and 1866F coils by Downes-Smith Company, 540 Fairfield Ave., Frigidaire dealer. The refrigerator is 4 x 10 x 7 ft. in dimensions.

The same concern has also equipped the Black Rock Market, 2847 Fairfield Ave., with a C compressor and 1278F coils to cool a walk-in refrigerator 8 x 10 x 10 ft. in dimensions.

Directs Tests



GARDNER POOLE
Vice-President of the Birdseye Packing Co. and President of the American Institute of Refrigeration, directed the tests on low temperature equipment.

ELECTRIC REFRIGERATION USED IN MOST FOUNTAINS

Boston—"We make scarcely one soda fountain a year which is equipped for ice refrigeration," declares F. H. Suarez, advertising manager of the United American Soda Fountain Co.

Cleanliness and economy, Suarez believes, are the two big reasons for the conquest of the soda fountain field by electric refrigeration.

Modern soda fountains, he points out, are equipped with electrically-refrigerated luncheonette compartments for meats, fruits, and vegetables, in addition to the refrigerated compartments for ice cream, syrups and water.

"Ice cream cabinets made by electric refrigeration manufacturers have been making great inroads on sales of com-

(Concluded on Page 7, Column 4)

Keeping Cool In Cuba



Kelvinator-Equipped Soda Fountain Does Rushing Business.

Birdseye Executives Plan Big New England Campaign

BULLETIN

BOSTON—Any doubts as to the availability of satisfactory low temperature display cases, and as to the immediate future of quick-frozen food merchandising, have been dispelled by officials of the Birdseye Packing Co., a General Foods Corp. subsidiary. After running a series of laboratory tests on all low temperature cases submitted, Birdseye officials have informed certain manufacturers that their cases have been approved. Coincident with this announcement comes news of a big spring and summer sales campaign on Birdseye Frosted Foods throughout the New England states.

This campaign will be a straight commercial operation.—Editor.

SALES PROGRAM ON COMMERCIAL BASIS

Reduced Prices In Springfield

Springfield, Mass.—Reduced prices of meat items, together with new additions to the line, have increased the interest in Birdseye Frosted Foods here.

Leg of spring lamb, three-quarters boned, was put on as a week-end special, Feb. 6 and 7, at 34 cents a pound, blue label (first grade), and 29 cents, orange label (second grade). Another special was boneless rolled rib roast beef at 39 cents, blue label, and 29 cents, orange label. Pork loin roast, blue label, sold at 24 cents. Blackberries are now being sold, along with strawberries and cherries.

Birdseye executives have been laying out production plans for the coming year in Boston during the last fortnight. All meats and fish to be sold in the campaign will be packed by Batchelder, Snyder, Dorr & Doe, of this city. The Ray Maling Co., Inc., of Hillsboro, Oregon, will pack fruits and vegetables for the Birdseye Company.

Ray Maling of the Oregon concern has been conferring here with Birdseye officials.

(Concluded on Page 7, Column 2)

LOW TEMPERATURE CABINETS APPROVED

By George F. Taubeneck

Boston—Successful low temperature cases have arrived. Contrary to the general opinion now prevailing in the world of food merchandising, both display cases and wall boxes have been developed which will keep quick-frozen foods in satisfactory condition under any difficulties which have yet presented themselves.

Proof for these statements is to be found here in the laboratories of Batchelder, Snyder, Dorr & Doe, large meat packing house which is now a General Foods subsidiary.

In these laboratories, under the watchful eyes of a veteran of the refrigeration industry and a young engineer who is a product of the Westinghouse test school, low temperature cases submitted by a number of representative refrigerator cabinet manufacturers have been undergoing several months of testing under severe conditions.

The veteran, Gardner Poole, president of the American Institute of Refrigeration, and twice an official delegate of the United States to World Refrigeration Congresses, and the young engineer, George Raye, a graduate of the University of Maine, both testify that several of these cases have successfully crested the fiercest waves of heat and humidity which they could evoke.

Among the display cases now being tested are models submitted by Mills Novelty (refrigerated by a Zerozone methyl chloride machine), Weber (refrigerated by a Kelvinator methyl chloride machine), Warren (refrigerated by a Copeland methyl chloride machine), Hussman (refrigerated by a Kelvinator methyl chloride machine), Gibson (refrigerated by a DoleCo ammonia machine), Grand Rapids Cabinet (refrigerated by a Universal Cooler methyl chloride machine), Hill (refrigerated by a Lipman ammonia machine), Seeger (refrigerated by a DoleCo ammonia machine), Ottenheimer (refrigerated by a York ammonia machine), and Rice

(Concluded on Page 7, Column 1)

COLD APPLES

Toronto, Ont.—Refrigerated with solid carbon dioxide, a number of apple-vending machines were on display at the Royal Winter Fair held here recently.

Each machine has a capacity of from 60 to 100 apples, which are displayed behind glass. Circular coin locks are standard equipment.

Solid carbon dioxide is used, not only to preserve the apples properly, but to make them more palatable by virtue of their coldness when presented to the customer in return for his coin.

TAPE FOR FROZEN FOOD

New York City—Corrugated containers bound with "Gairtite," a new gummed tape which its manufacturers believe will be useful in keeping frozen foods, has been announced by the Robert Gair Co., 420 Lexington Ave.

San Francisco—Cold storage warehouses have increased in California, during the last eighteen months, from 59 to 64, according to the State Board of Public Health.

The total number of pounds of various foods and food products in cold storage, reported at the close of 1930, was 150,488,060. This figure does not include 997,514 cases of eggs (30 dozen eggs to the case), nor 854,314 gallons of miscellaneous beverages and fruit juices.

The 150,488,060 pounds total for the various commodities in cold storage exceeds the figures for June 30, 1930, to the extent of 106,000,000.

SWIFT SEES SAVINGS WITH FROZEN MEATS

SWIFT & Co. has been packaging fresh meat at its plants. The purpose of this pioneering work is twofold: first, to make available to consumers the finest qualities of meats in convenient packages; and, secondly, to reduce the costs of meat distribution.

Where the work of cutting and packaging is done at the plant, substantial economies can be made in the utilization of fats and trimmings that are frequently wasted. Economies can also be made through mass operations which would not be possible in the retailer's shop.

Finally, important savings in freight and distribution expense would be effected if it were possible to supply each market with the particular kind of meat it required, rather than with whole sides.

From the retailer's point of view, the handling of packaged meats simplifies his selling problem because he knows his costs, and he is relieved of the distribution losses that normally result from shrinkage and trimming.

The future of packaged meats depends largely upon the rate at which retailers provide themselves with the kind of refrigerating equipment necessary for proper handling. Some progress has already been made along this line, but it is only a beginning.

So far as the work of selecting, cutting, and packaging is concerned, our experience to date clearly shows that these operations in central plants are entirely practical and a step in the direction of waste elimination in the marketing process.

More than that, the economical marketing of meat in attractive and convenient packages should be the means of inducing more people to eat more of this healthful, stimulating food.—Swift & Co. 1931 Year Book.

DYER MAKES REFRIGERATED VENDING MACHINE

New York—Employing its own methyl chloride refrigerating unit, the Dyer Electric Cooler Corp., of 1071 Sixth Ave., is now marketing mechanically cooled vending machines designed to sell bottled drinks, bulk drinks, and ice cream.

A number of these machines are now in operation at various points scattered around New York and the Atlantic seaboard, according to H. W. Dyer of that company, and the demand for these products seems to be increasing.

As soon as conditions warrant, vending machines which will handle many types of perishable foodstuffs will be marketed by the Dyer Corp., Mr. Dyer says.

Soda Fountains Are Popular in Cuba

By R. A. Lundquist
Manager, Export Division
Kelvinator Corp.

ELectric refrigeration is progressing at a rapid pace in Cuba.

In a recent visit with Miguel Arrelano, Kelvinator distributor at Havana, I had occasion to look over a number of commercial installations made by the service department of this company.

In every place visited the owner or manager was anxious to come forward and tell us how pleased he was with the service rendered him by the refrigeration installation.

The proprietors very frequently evidenced their satisfaction by offering samples of what was contained in the refrigerated chambers. As most of the installations visited the first few hours were in bars, we found it advisable to specialize on soda fountains from them on.

And don't think their soda fountains down there are not up to date. They sell toasted sandwiches, hot dogs and other similar items necessary. Hot dogs are known as "perritos calientes," which translates into "hot doggies"—"perritos" being the diminutive of the regular word for "dog."

Oftentimes the soda fountain operator advertises what he has to sell through the medium of a small moving electric sign.

There was an interesting phase of the soda fountain business in Cuba brought out while we were in the "El Aguila." There is sufficient room in this store for a number of tables at which patrons of the fountain could be served, but it is not proper for a Cuban lady to come in alone and be seated at a table. It is perfectly permissible, however, for her to enter and take a seat on a soda fountain stool.

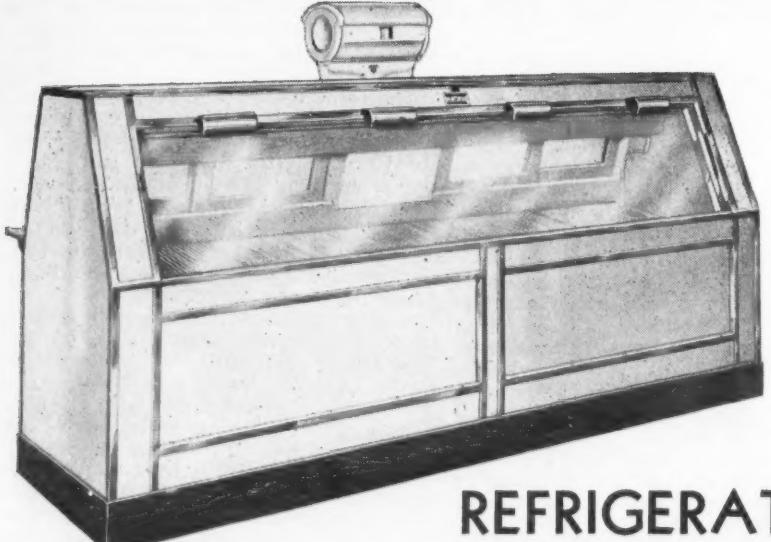
Many of the soda fountains offer harder drinks than we permit in the United States, and for their part the bars counter this competition by installing ice cream cabinets and serving "helados" to those of their patrons who prefer the masculine atmosphere of the bar to the mixed company of the soda fountain.

YORK FOR HOTEL

New Haven, Conn.—A 45-ton York machine has been installed in the Hotel Taft here, by the York Ice Machinery Corporation.

The unit, which is a two-cylinder ammonia compressor, is used to operate the hotel's ice-making plants and to furnish refrigeration for 21 coolers containing meats, fish, fruits, vegetables and other perishables.

The PERCIVAL Line



REFRIGERATOR COUNTERS

for QUICK SALES among Grocers and Markets

In the Percival line of seven Refrigerator Counters, you will find a counter for every purpose and every purse. Five types exclusively for Mechanical Refrigeration—two types for either Mechanical Refrigeration or Crushed Ice and salt.

Grocery and Market owners have therefore come to look upon the Percival Line as furnishing them just the equipment they need, both from a mechanical and sales-producing standpoint. They know that meats and foods well protected and well displayed are easily sold. The Percival Line is a profit line. Write us on your letter-head mentioning other lines handled.

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Note how this line of
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Monel Trimmed
Porcelain—Overhead Coiled Line

No. 200—Three-shelf All Display.

No. 310—Top Display only.

No. 410—Combination Display and Storage.

No. 710—Divided two-temperature,

20-40 Combination Display and Storage. One end for 20 degrees—one end for 40 degrees.

No. 800—All Freezer—Combination Display and Storage. All one temperature at or below 20 degrees.

Can be Used with Crushed Ice and Salt.

No. 325—Top Display only. Back coiled.

No. 610—Combination Display and Storage. End Coiled.

British Association Displays Interest In Quick Freezing at Monthly Meeting

London.—Completion of the distribution channels of quick-frozen products between the primary freezing points and the consumer is the principal problem to be solved by the quick-frozen interests, in the opinion of Joseph Raymond, editor of *Cold Storage and Produce Review*. Mr. Raymond reviewed the English situation recently with the statements which follow.

THE unusually large attendance at this month's meeting of the British Association, when rapid freezing was the subject of the evening, was fair indication of the importance attaching in most people's mind to this great development in refrigerating practice. The questions asked and answered at the meeting bore testimony to this attitude of eager interest and inquiry, and the practical turn given to the proceedings by the exhibit and distribution of rapid-frozen meat and fish in sample carton packages lent an air of actuality that was convincing. Whereas the Paper title suggested a general survey of the various rapid-freezing systems, the discourse took the form of a more partial exposition of the one system being demonstrated on a commercial scale in this country. This, however, was not held to detract from the interest or value of the address, which at least left hearers considerably more informed on the conditions and potentialities of this type of refrigeration than they could have been before their attendance at the meeting. Hence the general feeling of the great utility of the event, both from a technical and a general point of view. We suppose that it was the very piquancy of the topic and the urgent desirability of the further unfoldment of many of its technical issues which has led the Association to devote its next monthly meeting, that of January, to a further discussion of rapid freezing problems.

Making Haste Slowly

"We do not know of any development in our own industry which, while stirring the imagination so deeply as to its vast importance, has at the same time given rise in its earlier stages to such a cloud of mystification and doubt as to how it may finally be incorporated in the general scheme of refrigerating practice. And yet rapid freezing has been with us for a quarter of a century at least. True, we have only just realized how it is that the punch of frost does no harm, where the slow caress of cold will destroy or impoverish. The phenomenon of the small crystal is now, so to speak, in the school books of our trade, and yet the vision is withheld—the vision of rapid freezing encompassing the earth. It is not even that we are waiting on our scientists. They have told their tale, and the rest of the story will probably emerge from the commercial laboratories of the industry itself. The admirable research of this kind that we have heard of from America we gratefully acknowledge. That research has even extended to the retail marketing avenues which have reported a most hopeful reaction on the part of the public so far as rapid-frozen packaged meats are concerned. And yet the large undertakings who have taken on their shoulders the advancement of this new development walk very warily and hesitate, for the moment, at least, to let their marketing efforts gain that universality which the popularity of the prod-

uct would quickly gain for them. We see the wisdom of this policy of caution. A false, or even a premature, step would inflict grave hindrance on a movement which necessarily has many enemies.

The Principal Problem

"But the principal problem to be solved—and it is a gigantic task in itself—is the forging of complete links of safe storage for the rapid-frozen product between the point of primary freezing and the point of consumption. Where the chain of refrigeration had to be safe before, in the case of ordinary frozen produce, now, with rapid-frozen foods, the door against temperature fluctuation has to be doubly locked and bolted. The magnitude of this task will be gathered from contemplation of the rail, road, and sea transit risks to be overcome, and the handling and storage perils to be avoided. Some might even doubt whether such a task could ever successfully be tackled. For science has told us that the smaller ice crystals formed in the tissue of the food substance by rapid freezing are not content to remain small and harmless, but on the slightest provocation of temperature rise actually grow in size to the subsequent detriment of the commodity.

A Suggestion for Co-ordination

"The price of immunity from this harm is not only eternal vigilance, but the constant expenditure of regular and powerful refrigerating effect from the moment after the goods have been rapid frozen until they are eaten. We do not doubt that those who found the answer to the first part of the conundrum will solve the rest of the riddle. But it needs much painstaking effort, and, we suggest, much co-ordination between those engaged at the several points of the refrigerating chain. It is not always easy to secure this co-ordination. The thought occurs to us that if ever a Refrigeration Research Association were desirable to undertake for the benefit of a wide range of refrigerating interests a work which none of those interests singly could hope to accomplish, it might well be for the line of research which we have indicated in regard to a safe chain of commercial refrigeration to safeguard rapid-frozen products on their way to the public. We believe that if the problem, or many problems, involved were relegated to such a public party, they might be solved with great saving of time for the early launching of rapid-frozen business. Perhaps, also, the fact that such a public authority had taken a hand in the matter might stimulate further confidence in the public mind, and even negative some of their attitude of hostility to the new idea which has raised its head in some quarters. Moreover, the commitment of the research to such a body would not, to our mind, hinder any firm, large or small, interested, from independent progress on individual lines."

OHIO VETERANS TO HAVE COLD DRINKING WATER

Detroit.—The Liquid Cooler Corp. reports that two No. S-650-I Tempite coolers for remote, dead-end installation were placed in the National Military Home at Dayton, Ohio, under the supervision of the Veterans' National Homes Administration Bureau.

RETAILERS LACK LOW TEMPERATURE CASES

By Robert H. Brown

Birmingham, Ala.—A lack of equipment to handle frozen foods on the part of retail merchants in and around Birmingham has made it impossible for the meat packers to introduce the food to the housewives of Birmingham, a survey of local food stores shows.

To make the situation just a little more serious, the general depression has put the retail merchant in the frame of mind where he hesitates before even considering buying low temperature equipment.

Frozen meats have been put on sale here only on a very small scale. Not a single retail store downtown has ever stocked them. The commissary stores of the industrial corporations are the only firms which have given these foods a trial.

"The Woodward Iron Co. has sold quite a bit of pork chops and other frozen meats in its stores, operated for their employees," says D. W. Peace, of the Birmingham plant of Swift & Co. "However, their stocks have been very limited, because of inefficient equipment. The same is true for most every store in the city."

The Birmingham Swift branch has for some time carried a small line of quick frozen food. Mr. Peace states that his associates have been pleased with results noticed from the small volume of business they have done so far, but they have been handicapped because of the inefficient equipment of dealers.

Jack Saur, sales manager of the Matthews Electric Supply Co., state distributor for General Electric refrigerators, has for some time been interested in the future of quick frozen food. Others have been equally as interested and have made inquiries from time to time. Mr. Saur points out.

Birmingham retailers quite frankly admit that they know little or nothing about the new food movement toward low temperatures and individual packages.

One of the largest food merchants in the city declared to the writer that he had never heard of it. Another added that it was bunk. But another, a manager of one of the newest meat shops in the city, declared that he was willing to give the product a fair trial.

Last winter a number of creameries and delicatessens sold frozen strawberries prepared by the Peerless Ice Cream Company.

However, this company declared that the lack of proper equipment on the part of retailers offset their small volume of profit. Partly for this reason the Peerless concern has not frozen any strawberries this year.

Strawberries, thus far, have been the only type of fruit to be introduced in this state.

BRIDGEPORT MERCHANTS BUY NEW REFRIGERATORS

Bridgeport, Conn.—Downes-Smith Co., Frigidaire dealer at 540 Fairfield Ave., has installed an AP-60 refrigerator in the Connecticut Chop House here.

A Frigidaire compressor and two 96-F coils have been placed in the Borysewicz Market, 66 Allen St., to refrigerate a walk-in cooler, 8 x 8 x 10 ft. Another C compressor, with three 96-F coils, was recently installed in the market of Michael Zavory, Bostwick Ave., to cool a box 10 x 8 x 9 ft. in size.

Hart-Eddy, 308 Fairfield Ave., Servel commercial representatives for Connecticut, have installed Servel equipment in the Comey Inn, Main St., Torrington, Conn.

The equipment consists of a $\frac{1}{4}$ h.p. unit to cool a 12 x 12 x 8 walk-in box, a $\frac{1}{4}$ h.p. for a 150 lb. ice-maker, and a $\frac{1}{4}$ h.p. compressor for a butler's refrigerator of 12 cu. ft. capacity.

Allen Bros., Broad St. and Fairfield Ave., General Electric refrigerator dealer for Bridgeport, has installed G. E. commercial refrigerators in two Bridgeport restaurants, according to Everett W. Allen, president.

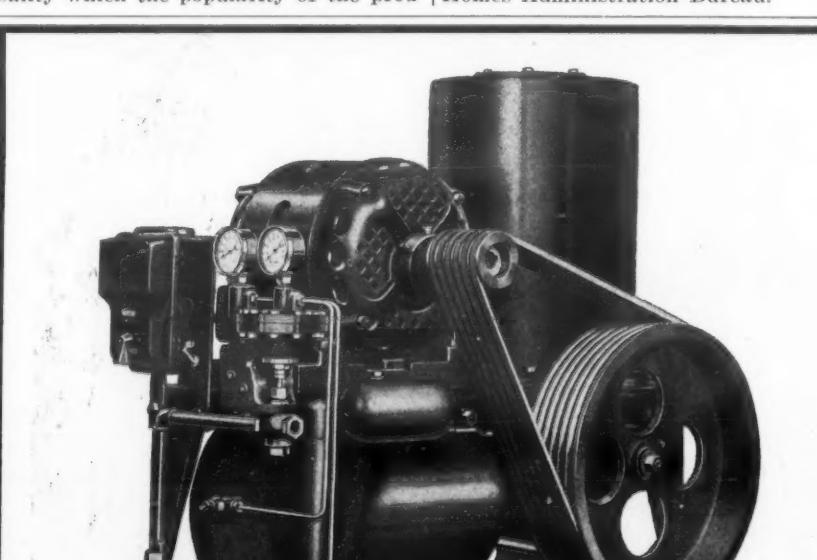
A 60 cu. ft. model has been placed in the Star Lunch, Wall Street, and a 45 cu. ft. electric refrigerator has been installed in the Colonial Restaurant, 153 John St.

U. S. S. GREER EQUIPPED WITH KELVINATORS

Bremerton, Wash.—Just before sailing from her berth at the Navy Yard here, the U. S. S. "Greer," one of Uncle Sam's destroyers, was Kelvinator equipped.

A Model U7P Kelvinator for the officers' mess; a 3-hole portable ice cream cabinet; one R-10 condensing unit; one 20-gal. capacity drinking fountain, and one large storage box and coils were installed at various points aboard the destroyer.

The "Greer" was overhauled at the Bremerton Yard in preparation for her cruise southward.



EXCELSIOR REFRIGERATING MACHINES

offer you the most attractive Dealer Proposition in the entire refrigeration field. These sturdy and attractive commercial units are right up-to-the-minute in mechanical features and thoroughly perfected in every detail. They are backed by Carbondale's 40-years' experience in the Refrigeration Industry.

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COLD STORAGE PLANT HELPS TRUCK FARMS

By Archie Richardson

A SMALL and comparatively inexpensive cold storage plant on the farm may often spell the difference between profit and loss on an important truck crop, according to R. F. Sams, Jr., a truck farmer living near Atlanta, Ga.

His plant was built at a cost of about \$2,500, and has a total capacity of three large truck loads. It has two cork-lined chambers, one 12 ft. square and the other 7½ ft. square, with the ceiling of each 8 ft. high. Both chambers may be maintained at the same, or at different temperatures.

When a truck crop, say tomatoes, must be gathered when the market is flooded, it goes into storage instead of to market. A very different condition may prevail a few days later, and the tomatoes go on the market at top prices.

Tomatoes Kept

In the late fall, when prices are comparatively low, the tomatoes are placed in storage, and with proper temperature regulation can be kept in prime condition for a long time. After the frosts put an end to the local supply, and the market becomes dependent on Florida growers, Mr. Sams' tomatoes go on the market at fancy prices.

In hot weather, it has been found, tomatoes gathered and stored at a temperature of 70 degrees ripen more smoothly and with more uniform color, and command better prices than those ripened on the vine.

Ordinarily, produce is brought to the Atlanta market as is most convenient with the grower, and with little regard to the supply or the price. What goes begging one day may bring fancy prices two or three days later.

Raspberries, for instance, are brought to the market as they are gathered. By the middle of the week there is an oversupply and prices are low, and by the end of the week there is an undersupply and prices are high. Accordingly, as berries are picked at Mr. Sams' place they are placed in storage instead of being sent to market, and toward the end of the week, when prices soar, the entire week's picking is sold at the higher prices.

Hydration Effect

Mr. Sams has found that through proper regulation of temperature and circulation, hydration of vegetables can be properly cared for. With reasonable care the vegetables that have been stored go to market as fresh and crisp as those gathered the same morning.

Particularly are raspberries and such fruits adapted to electric refrigeration, Mr. Sams has found. They undergo a dehydration that improves the texture and makes it possible to carry them over several days with no bad effects.

The operation of Mr. Sams' cold storage plant has been found quite economical in comparison with the benefits gained. The current consumption during last summer ran, roughly, from seven to nine hundred kilowatt hours per month.

AKRON RESTAURANTS BUY COPELAND REFRIGERATION

Akron, Ohio—J. S. Coulter, manager of the Copeland sales in Akron, has recently sold a number of commercial jobs to clubs, motor inns and restaurants. A 45 cu. ft. cabinet was placed in the kitchens of the Akron Liedertafel, the German club house, while a 45 cu. ft. cabinet and a water cooler connected with the same compressor were installed in the Cottage Lunch. The Turkeyfoot Lake Golf Club and the Ghent Road Inn, on newly reached suburban power lines, were also sold Copelands.

A popular roadside inn near Akron, Motor Inn, was recently equipped with 1 Seeger PH-40 refrigerator; 1 D-30 Copeland tank, installed in a No. 125 cabinet for ice cubes, 1 R444; a Copeland water cooling cabinet assembly; 1 W. A. 825 Copeland condensing unit; 1 PH-2 Nelson ice cream cabinet; and 1 Model Q Copeland condensing unit.

LOS ANGELES CAFETERIA INSTALLS G. E. MODEL

Los Angeles—A large General Electric commercial refrigerator has been placed in the cafeteria of The Broadway Department Store here.

The refrigerator, a CS 1202 model, is equipped with two units, making it possible to keep meats and vegetables at different temperatures.

NEW YORK CO. ORDERS BEVERAGE COOLERS

Mt. Vernon, N. Y.—The A. H. Karl Co. recently ordered for local installation two Temprite model No. 40-B1 beverage coolers, equipped with temperature control valves set to deliver the beverage at a temperature of 35 degrees.

Servel Men Plan Commercial Campaign



National commercial representatives who attended the Servel Commercial Convention held at Evansville, Ind., the early part of this month. Front row (left to right): T. C. Carley, New York; R. Ernest, New York; C. L. Olin, Evansville; T. E. Parr, Albany; C. E. Colyer, Export, New York; J. T. Elliott, Evansville; J. Slowe, St. Louis; R. Etherton, St. Louis, and V. E. Vining, Evansville. Second Row: J. E. Pate, Evansville; A. J. Bodenmuller, Evansville; L. M. Lane, New York; A. F. Scherer, New York, Export; R. Schook, Los Angeles; W. L. Tyson, Okolona, Miss.; W. A. Mahoney, Lockport, N. Y., and C. Conkey, Evansville. Back Row: O. L. McKinney, Atlanta, Ga.; W. O. Dunn, Jr., Lakewood, Ohio; S. R. Cooper, Evansville; R. Eskew, Albany, N. Y.; W. Aulsebrook, Evansville; C. S. Housel, New York; Paul Jones, Evansville; W. Cissell, Evansville; A. Remsen, Evansville; O. Hartig, Evansville; A. Schmitz, Cleveland; O. B. Lance, Evansville; A. Gaines, Chicago, and R. Peters, Washington, D. C.

SEED GERMINATORS USING ELECTRIC REFRIGERATION

New Brunswick, N. J.—Electric refrigeration will be used for germinating hard seeds and seeds difficult to germinate, according to A. C. McLean, of the New Jersey Agricultural Extension. The method was announced recently by the Boyce-Thompson Institute for Plant Research, as a means of accomplishing difficult germination. Mr. McLean recommends this treatment for seeds which need "after-ripening," such as those of some alpine plants, and certain trees and shrubs.

"Seeds of species of primula, adonis, ranunculus, anemone, or any other alpine plants that have not germinated well in the past, should be given this treatment in January or February," he points out.

"Wrap the seeds in oiled paper, and put them in damp peat moss or sand in the electric refrigerator. The peat or sand should be kept moist. The seeds should be held in the refrigerator for two or three months at a temperature of about 40 degrees F."

"Seeds so treated will be ready for planting in March or early April, and a large percentage of them should germinate."

"Information is not complete on the seeds of all alpine plants, but by trying the refrigerator method one can discover its effectiveness on those seeds which have not germinated well under other conditions," he concluded.

SANITARIUM EQUIPPED WITH ICE MAKER

Hartford, Conn.—A General Electric ice maker of 45 cu. ft. capacity has been installed by the Newton-Parsons Co. in the new Cedarcrest Sanitarium, built by the state for tuberculosis patients.

While the lower compartment is used for ice cubes, the upper division, having four shelves, contains a supply of ice-packs containing a non-crystallizing glycerine and water solution of a temperature of 25 degrees Fahrenheit. A model C-450 for milk and other supplies has also been installed in the nurses' quarters, and a model PL-17 has been placed in the doctors' quarters.

The same company has installed a model 1202 and two DP-3 water coolers in the House of Good Shepherd.

COAST COMPANY TO ERECT SOLID CO₂ PLANT

Antelope, Calif.—The California Lime & Products Co., R. L. Hollingsworth, general manager, Lincoln, Calif., will build a \$700,000 plant here for the production of solid carbon dioxide.

With the lime plant in conjunction, it is estimated that the total cost of the project will exceed \$1,000,000. The lime plant will have a capacity of 200 tons per day. The carbon dioxide plant will have a capacity of 50 tons of solid CO₂ per day.

Purchase of 60 acres of property has been completed and construction will start March 1st.

REFRIGERATORS USED AT FOOD EXHIBITION

Cleveland—Electric refrigerators were both on duty and display at the Food Show held in the Public Auditorium here Feb. 5 to 13. On the main exhibition floor, where food products were displayed, a number of exhibitors used electric refrigerators for storing perishable products.

The Majestic Distributing Corp., of Cleveland, had Majestic refrigerators on display in the exhibits of John J. Jelke Co. (Good Luck Products), S. M. A. Corp. (Pantry Cream), General Foods (Hellman's Mayonnaise), Borden Co., and several other companies. General Electric refrigerators were used in the exhibits of the Clover Meadow Dairy and Pee-Chee Dairy Products.

Eight distributors had refrigeration displays in the lower exhibition hall, which was devoted entirely to household appliances. In this group were: Danforth Refrigeration Co., Westinghouse; Carnegie Electric Co., Copeland; May Co., Rice; Smith & Obey; Electrolux; Kelvinator Sales Corp.; Starr Piano Co.; Majestic Distributing Corp.; Cushman Refrigeration Co., General Electric; and the Apex Electrical Manufacturing Co.

MIAMI APARTMENTS BUY FRIGIDAIRE

Miami, Fla.—The Domestic Refrigeration Co., Inc., of 28 E. Flagler Street, dealers in Frigidaires, has just completed a large installation in an apartment house owned by M. C. Frank at 950 S. W. 5th Street.

This company has also installed 22 units in the Taradish Apartments on Miami Beach, and 28 units in the new Bolton Apartments.



equipment destined to revolutionize the merchandising of ice cream

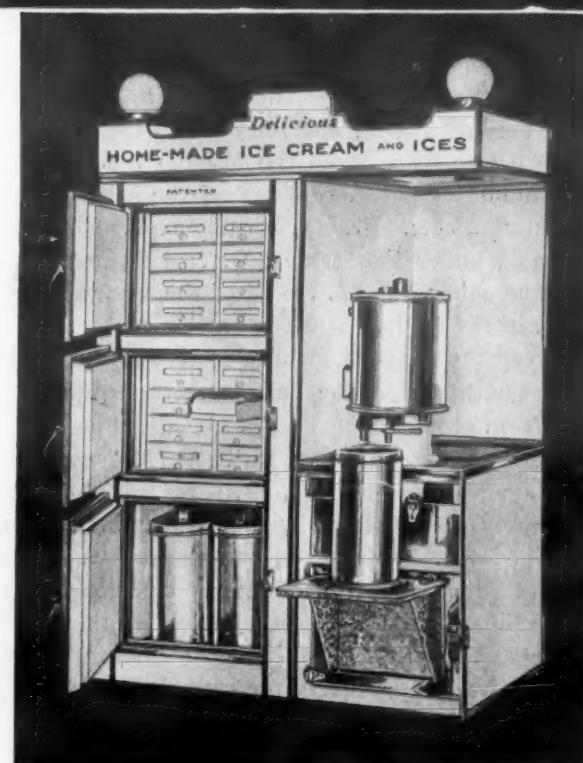
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This unique, patented unit which combines practically all the equipment necessary for making and retailing ice cream and serving sodas and other beverages, is the latest achievement of the Universal Freezer Corp., and constitutes the last word in modern merchandising equipment.

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Shown above is a combination of UNIVERSAL Freezer Unit, compartment for 20 gallons of ice cream mix and cabinet for ice cream in bulk and packages.

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Solving a Dilemma

APPROXIMATELY a year ago at this time the refrigeration and food industries were in a state of suppressed excitement. Almost simultaneously, as is often the case in discoveries of that nature, refrigeration engineers in widely scattered localities announced the development of rapid-freezing systems designed for quantity production.

Experiments on quick-freezing devices had progressed intermittently during the last decade and a half, but the inventors were never received with particular seriousness until the latter part of 1929, when some of the larger food packing and producing organizations suddenly took an interest in the situation.

Led by General Foods Corp. and Swift & Co., both of which concerns began producing quick-frozen meats, fish, and vegetables and distributing them in selected "key" cities, several producers entered the field. More numerous with the advertising men, publicists, after-dinner speakers, editorial writers, and unofficial observers of trends and movements who pointed with pride to this latest achievement of mechanical ingenuity.

The result was that quick-frozen foods enjoyed a tidal wave of publicity. Everywhere this new method of food preservation was hailed as one of the most notable innovations that had appeared in recent years. Many predicted that this development in the art of refrigeration would shortly revolutionize existing methods of food distribution.

By staging a concentrated selling campaign in Springfield, Massachusetts, General Foods focussed considerable attention upon Birdseye Frosted Foods, and dramatized the whole quick-frozen foods movement. Springfield buyers responded to the advertising of these new products, and bought them. The campaign was extended for a period, and finally closed.

Followed then the customary reaction. The doubters had their inning, and began to disseminate a growing belief that the expected revolution in food distribution was not going to occur so soon as had been anticipated. Some were still convinced that the rapid freezing of perishables was a significant development, and that it would arrive sooner or later. Even so, by late autumn the situation had reached an impasse. Case manufacturers were waiting for the packers; packers were waiting for the case manufacturers; retailers and the public were occupying their minds with the depression.

Reasons for the halting progress of the frozen foods movement all boiled down to a question of cases. The first question was: Who had a satisfactory low temperature case? And the second: Who would buy such cases, the packer or the retailer? The whole situation was blurred by a vagueness about the answers given to both questions.

Although many cabinet manufacturers and makers of electric refrigeration equipment displayed interest in the field, not very much low temperature equipment was sold in 1930. The problem of designing and manufacturing a cabinet which would maintain an inside temperature below zero, while the outside temperature approached 100° and the humidity percentage neared the saturation point, had a number of puzzling facets. Frames of early experimental low temperature cabinets warped under the strain. Defrosting presented still another problem, for the raising and lowering of the temperature damaged cellular structure in the foods. And not until recently were case manufacturers able to keep the glass in display sections from frosting.

Furthermore, the packers became more cautious than ever when confronted with the almost-violent objections registered by many of their existing outlets. Butchers foresaw the eventual relegation of their age-old craft to an ill-starred oblivion. Both sanitation and economy were effected by this new method of cutting meats at the packing house, quick-freezing, and packaging. By means of the dependable standardization of meat cuts and packaging, meats could now be sold over the counter of a grocery store by an ordinary clerk. Old-fashioned butchers, who saw in this movement only a menace to their livelihood, and not an opportunity for swinging into line with modern methods of merchandising, made dire threats to the packers and sought prohibitory legislation.

That neither the objections of butchers nor the case problems will be likely to halt the movement much longer is indicated by the announcement in this issue of the projected extensive merchandising of Birdseye Frosted Foods throughout New England this spring and summer. General Foods officials have placed a definite O. K. upon several sample cases, and announce themselves as ready to go ahead with the merchandising of quick-frozen foods on a commercial basis. It should be welcome news to the industry.

GLEANINGS FROM CURRENT PERIODICALS

To learn how to keep distribution in high gear, we must learn how to adjust merchandise, item by item, to the exact level of our customers. We must know exactly what customers want and keep an eye out for any stocks that do not meet their needs most of the time.

Big advantage of some chains comes through close attention to consumer demand—for various income classes and communities—and consequent readjustment of stocks.

There is no reason why this quick check cannot be made by an individual distributor. For certain merchandise lines, the single distributor has a decided advantage.—Alvin E. Dodd in *The Canner*, Jan. 10.

Returns from 200 questionnaires reveal that practically all favorable information and comment on the subject, "What effect will frozen fruits have on selling canned fruits?" came from north of the Ohio River and east of the Mississippi.

Greatest possibilities seem to lie in territory of dense population where local fruit is available only for short periods of the year.

These sections also have the most suitable storage and distribution facilities available for present use. Buying power is greatest here with a developed spending habit. Other districts, as the Pacific Coast, seem to have too many local fresh fruits over most of the year to permit any considerable sale.

Southern states and the Missouri River district populations are principally rural and too widely distributed to reach economically.—R. J. Roulston, Vice-Pres., Durand-McNeil-Horner Co., Chicago, Ill., before National Canners' Assn. Convention, Jan. 19.

"Quick-freezing of strawberries and tomatoes at Bald Knob, Arkansas, is being considered by local produce interests. Quick-freezing of tomatoes will help domestic producers compete with the foreign product during the winter months, it is felt."—N. Y. *Journal of Commerce*, Jan. 2.

"In operating complete food markets, the grocery chain automatically steps out of a strictly price appeal into a quality appeal range. Through this, size of average order is increased and gets added profit from such items as delicacies, meats and fresh fruits and vegetables. It is along these lines that more progressive food chains are finding a solution to increased, intensive competition.

"Strictly price appeal, with the small unit restricted to sale of groceries, was not the way out, and development of the complete food market is in some degree an admission of the fact."—M. G. Sweeney, *Chain Store Review*, January.

"Peeled or unpeeled sliced figs, completely covered with a sugar solution, lend themselves to freezing as well as any fruit tried at this experiment station."—J. G. Woodroof and J. E. Bailey, Georgia Experiment Station, Experiment, Ga., in *Refrigeration*, January.

Despite high percentage of drops, only four groups—hardware, dry goods, general and grocery stores—had fewer stores in 1929 than in 1925.

With the exception of grocery stores and garages, increases were reported only for towns of at least 2,000 inhabitants. Highest mortality for the period was reported for the 17 towns between 7,000 and 15,000 inhabitants, 43.1%.

Towns between 2,000 and 5,000 numbering 25, made the best longevity showing, losing only 37.7%.—National *Provisioner*, January.

"Food as a whole is under-advertised despite the fact that heavy advertising is provided for certain kinds of food products.

"Five per cent of all foods sold are receiving 77% of the advertising in the January issue of the leading magazines, and include such items as cereal preparations, canned fruits and vegetables, cooking fats and miscellaneous packaged specialties.

"The great bulk of food products that the distributor carries is not subject to any large advertising expense."—E. L. Rhoades, before National Wholesale Grocers' Assn. Convention, N. Y. *Journal of Commerce*, Jan. 21.

"A nationally advertised ice cream is a likelihood, with Borden selling this confection under its own name in those cities in which it has subsidiaries making this item.

"After the first of the year, the December 30 *Journal of Commerce* reports, ice cream under the Borden label is to be sold in Chicago, three subsidiary companies having been merged into the Borden Ice Cream Co. of Illinois."—The *Facts in Food Distribution*, Jan. 10.

An Editor on Wheels

Stories of Interesting PLACES in the Refrigeration Industry

By GEORGE F. TAUBENECK

Boston, Mass.

proper place, and defends it furiously against encroachment.

The noise and confusion can be heard for blocks. Many languages may be distinguished among the outcries of the hawkers and the haggling of the bargain-hunting customers.

Conspicuous among those who go there with baskets to fill are young married couples, who make the whole affair one grand lark.

Cambridge, Mass.

Although it bills itself as "the fast-growing industrial city in Massachusetts," Cambridge is still known to the outer world as the home of Harvard University.

It does have factories. It does have an industrious citizenry of its own. It does have stores and shoppes and apartments and homes.

But were it not for the fact that occasionally a Harvard student aims a deteriorated grapefruit at a radio crooner, or that periodically a book halled as "important" issues forth from a Harvard professor, Cambridge would be little noted nor long remembered by the newspaper-consuming American public.

Let those who have tears prepare to shed them now. There are no ivy-clad halls of learning (the university buildings are squat brick affairs jammed together into a huddle which is as uninspiring as an apartment-house section).

The proportion of coonskin coats possessed by the student population appears to be not more than one in 70. Professors do not ride bicycles and read yellowed tomes simultaneously, nor do they seem to be flagrantly—or even noticeably—absent-minded.

One who has witnessed some of the phenomena of middle western universities, marvels at the apparent dearth of Love's Young Dreams in Cambridge.

In the great co-educational institutions at Columbus, Ann Arbor, Madison, St. Paul and Champaign, men without women are as forlorn as ham without eggs.

One gets the impression that Hahvahd undergraduates are above such trifling. The men are rarely seen publicly, one is told, in the company of young women. There's a tradition against it.

Obviously many of these men are here to acquire knowledge and learning. And still more obviously culture-bound are the women to be found in Cambridge's halls of learning.

Men and women dress comfortably, and like adults, not like youths. Black and blue are the universal colors here, just as the formlessness of the sack coat and the tubular dress are the dominant modes.

It's a great place for those who don't like to "dress up."

One would expect that a city in which conservatism and traditionalism are so overpowering would be a great patron of the legitimate stage. It isn't.

Whereas New York casts are touring the road more and more, the Boston boards are singularly bereft of distinguished plays, even for one-night stands.

Oddly enough, current talkie hits are sent to Boston almost immediately upon release.

Still more surprising is the typography of newspapers. One might expect the sober, eight-column dignity of the *New York Times*. One finds, instead, screaming multi-column headlines, and the blackest type to be found anywhere outside of Los Angeles.

One of Boston's most engrossing spots is Blackstone street on Saturday afternoons. Here foodstuffs of every variety, almost all distress merchandise, are hawked from carts in the streets and open-air sidewalk stalls.

These push-cart peddlers are allowed to ply their trade on this street only, and between 2 o'clock in the afternoon and midnight on Saturday. Sidewalk stalls in the packing-houses which line the street are rented regularly to outdoor butchers, while the curb is lined with fruit and vegetable wagons. Each peddler knows his

Pride of the city is the River Charles which affords fine boating and other aquatic sports in season. It is a beautiful stream, and lends an English country-side touch to the landscape.

It is an humble, natural note in an area of haughty buildings, ascending streets, and aloof young men. In its humility it is reminiscent of the yarn about St. Peter and the soul applying at the Gates of Heaven, to-wit: St. Peter: "Whence came you?" Soul: "Harvard." St. Peter: "Well, you can come in, but you won't like it."

Culture and Cobwebs

There is something musty about culture. A bacterial "culture" is a mold. So, too, is the intellectual variety.

For proper fermentation and germination, culture seems to require age, dust, comfortable clothes, quietness, tea, fireplaces, and a dank, dark atmosphere.

Chicago, Detroit, Dayton—all municipal products of the machine age—are clean, bright, crisp, and hurrying. Boston, traditional home of American culture, is moldy and lethargic. European visitors should find the Massachusetts capitol quite homely.

A PAGE FOR HOME SERVICE WOMEN

KELVINATOR KITCHEN OFFERS NEW RECIPES

By Marion F. Sawyer
Home Economics Department
Kelvinator Corporation

EVEN the most enthusiastic home maker tires occasionally of the continuous round of meal preparation. "What shall I serve for dinner tonight?" is the cry of countless women in all sections of the country every day.

Perhaps it is more difficult to secure a variety of dishes for the main course of a meal than for any other one course. The traditional roasts, steaks and chops served for the meat course of the dinner, while enjoyed almost universally, should not be overworked. Why not try some of the new frozen entrees for a change?

The word "entree" as it has come to be commonly understood in American meal planning, refers to some meat, or meat substitute.

The following recipes for entrees were developed in the Kelvin Kitchen:

Salmon Entree—2 cups flaked salmon, 2 cups cooked spaghetti, 1 cup asparagus tips, 2 tablespoons lemon juice, $\frac{1}{4}$ cup mayonnaise, salt and pepper. Break spaghetti into small pieces and boil. Remove skin and bones from salmon and break with a fork, add lemon juice.

Drain and cool spaghetti and combine with mayonnaise, salmon and asparagus tips cut in small pieces. Season well and pack in normal freezing tray. Chill from one to one and one-half hours. Slice and serve on a bed of lettuce garnished with mayonnaise.

Tongue Molded in Aspic—Cold sliced tongue, sliced cold hard cooked eggs, aspic jelly. Prepare aspic jelly recipe. Use a loaf mold and harden one-fourth inch of the aspic on the bottom. Arrange slices of egg on the aspic and add, carefully, a small amount of the jelly.

When set add a second layer of aspic, then a layer of sliced tongue. Let this harden and then continue adding layers of egg and tongue. Chill in refrigerator until set.

Ham Salad in Tomato Cups—6 medium sized tomatoes, 1 cup minced ham, $\frac{1}{4}$ cup chopped celery, $\frac{1}{4}$ cup chopped nuts, 1 teaspoon vinegar, $\frac{1}{2}$ teaspoon mustard, 4 tablespoons mayonnaise, 1 hard cooked egg, chopped. Wash tomatoe centers and remove centers.

Combine chopped ingredients. Add vinegar to mayonnaise and combine with chopped mixture. Fill tomatoes and place in Kelvinator to chill. Serve on lettuce with mayonnaise, and garnish with cucumber slices.

Ham Mousse—3 egg yolks, $1\frac{1}{2}$ tablespoons gelatine, $\frac{1}{4}$ cup cold water, 1 cup heavy cream, $\frac{1}{2}$ cup hot chicken broth, salt, pepper and paprika, 1 cup minced ham. Beat egg yolks, add milk, and cook in double boiler until a light custard.

Soak gelatine in cold water and dissolve in hot chicken broth, then add to the custard. Season to taste, chill thoroughly in refrigerator, then add the minced ham and fold in the stiffly whipped cream. Place in tray and freeze for two to three hours.

HOME SERVICE WORK INCREASES IN NORTHWEST

By Edwina Nolan
Director of Home Service Department
General Electric Co.

Cleveland—Comprehensive home service programs by distributing, utility and dealer organizations throughout the Northwest are being developed rapidly as the realization of the value of this work tied up with direct sales efforts continues to grow apace.

The enthusiasm for this home service work impressed the writer during a trip through the Northwest concluded a short time ago. Utility organizations and managers of General Electric sales departments all through this section of the country have a newly awakened appreciation of home service. They perceive in it no little value of its three-fold purpose—building good will, increased sales, and more revenue resulting from increased kilowatt hour consumption.

One of the writer's first stops was at Milwaukee, where Miss Knaack, of the Shaefer Corp., is preparing to establish an active home service program.

Farther west, the Pacific Power & Light Co. is working energetically on a new program, and at Albany, Wash., the Mountain States Power Co. is impressing upon every member of its sales organization and others connected with the company the importance of home service work.

Cooking schools with an average attendance of 200 persons are conducted weekly by Miss Espy, director of home service for the Northwestern Electric Co., Portland, Ore. In these schools, I was informed, ranges have been emphasized. However, plans have been made now whereby the emphasis will be placed on electric refrigeration.

The need of more emphasis on refrigeration was particularly stressed by

Eggs, Seafoods Combine Inexpensively

By Clara G. Snyder

Eggs and seafoods may be combined to make many inexpensive dishes. Oysters, for example, are good with scrambled eggs.

For a pleasant luncheon plate that will entice those who are fond of sour foods, devilled eggs with pickled herring, arranged on curly endive and accompanied with buttered rye bread sandwiches, is easily prepared.

For a good hot dish Swedish fish lada may be served. It consists of a sort of unsweetened custard, to which flaked cooked fish has been added. Codfish flakes or oysters may be combined with the custard. To make the dish truly Scandinavian, lutfish, which has been steamed, may be flaked and added. Fish lada may be transformed into cheese lada simply by substituting grated cheese for the flaked fish.

Scalloped Eggs and Shrimp

3 tbsp. flour
3 tbsp. butter
 $1\frac{1}{2}$ c. milk
6 hard cooked eggs
 $\frac{1}{2}$ c. canned shrimp
 $\frac{1}{2}$ c. buttered crumbs
1 tbsp. chopped parsley
Salt and pepper

Make white sauce of first three ingredients. Add to it the sliced eggs, shrimp and parsley. Pour into buttered baking dish, sprinkle top with crumbs and bake in hot oven until crumbs are brown, about 15 minutes. Oysters may be substituted for the shrimp. (Serves 6.)

Salmon Noodle Loaf

$\frac{1}{4}$ oz. package of noodles
2 raw eggs
1 c. milk
4 hard cooked eggs
2 tbsp. butter
Salt and pepper

Cook noodles in boiling salted water until tender. Beat eggs slightly and add milk. Place a layer of noodles in a buttered baking dish, then a layer of flaked fish, a layer of sliced hard cooked egg and another layer of noodles.

Repeat until all the ingredients are used, topping the dish with a thin layer of noodles. Dot with butter. Beat the raw eggs slightly and add them to the milk. Season with salt and pepper and a pinch of mustard and pour over the food in the baking dish. Set into a pan of hot water and bake in a moderate oven 40 minutes. (Serves 6.)

Swedish Fish Lada

2 c. milk
3 tbsp. flour
3 tbsp. butter
3 eggs
2 c. flaked cooked fish
Salt and pepper

Make a white sauce of one cup of the milk, the flour and butter. Add the remaining milk, the eggs which have been beaten slightly, and the flaked fish. Season with salt and pepper. Pour into buttered casserole. Set into pan of hot water and bake in moderate oven 40 minutes. (Serves 6.)

Pacific Coast Women Hold Conference



Recent home service conference held by the Pacific Power & Light Co., at Walla Walla, Wash.

MISS JANSSEN JOINS HOME SERVICE STAFF

Detroit—Miss Gertrude Janssen, who has been in charge of the home economics department of the Kelvinator-Philadelphia Branch, has been transferred to the home economics staff at the home office in Detroit.

Mrs. Catherine Blumenthal, wife of the Kelvinator representative in Central America, spent the week of Feb. 2 in the Kelvin Kitchen, studying the methods used in Kelvinator research and demonstrations.

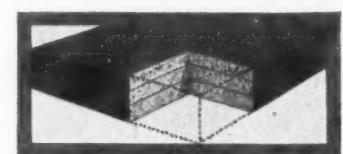
Mrs. Blumenthal will join her husband in Mexico City in the near future, and expects to establish a home economics department there, spreading the gospel of "cooking with cold" throughout Mexico.

Miss Marion F. Sawyer, Kelvinator home economist, recently spent three days in Ft. Wayne, Ind., visiting the Home Equipment Co., new Kelvinator distributor in that city. Early in February she spent two days in New York, returning by way of Cleveland, where she spoke at a sectional home service meeting of the N. E. L. A.

NEW JELL-O PLANT

Los Angeles—A new factory for the manufacture of "Jell-O" will be opened here in conjunction with the Maxwell House coffee plant, according to an announcement by General Foods Corp. Machinery is now being installed, and it is expected that the new factory will be in active operation next month.

EFFICIENT



Sealed Slabs

INSULATION

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LOW TEMPERATURE REFRIGERATION PROGRESS

Birdseye Explains Fundamental Principles of Rapid Freezing

By Clarence Birdseye, Birdseye Packing Co.

ALTHOUGH the preservation of perishable food products by means of mechanical refrigeration has, within the last couple of generations, become so extensive that it is difficult to see how our urban populations could exist without such foods, it must, nevertheless, be admitted that even the best sharp-frozen seafoods, meats, and poultry are not ordinarily as nutritious and flavorful as fresh unfrozen foods of the same sorts. If this were not the fact ordinary frozen foods would not habitually sell at a lower price than fresh products of the same kind in the same market.

In recent years, however, tremendous strides have been made in the application of low temperatures to the preservation of foods, and it has been found that the somewhat inferior quality of most frozen perishables is due, not to the mere fact that they have been frozen, but to improper methods of freezing, packaging, and storing.

What Happens When Animal Tissue Is Frozen

In order that we may clearly understand the reasons for the use of changed freezing, packaging, and storing methods, we must consider briefly the nature of animal and plant tissues and what happens when they are subjected to subfreezing temperatures.

Let us first consider the freezing of animal flesh. All such flesh—whether fish, meat or poultry—is composed of a multitude of tiny elastic-walled cells filled with jelly-like fluid containing in solution various salts, among which may be mentioned sodium and calcium. This jelly-like material, because of its salt content, does not freeze homogeneously. Instead, fresh-water ice crystals begin to form throughout the cell substance as soon as the temperature gets down to about 31° Fahrenheit.

As the temperature is further lowered more and more of the liquid is frozen out in the form of fresh-water ice, leaving behind an increasingly concentrated solution of the various salts. The entire water content of haddock, for instance, is not frozen until the temperature has been lowered to approximately -68° Fahrenheit; but about 75 per cent is frozen when the temperature reaches approximately +25°.

It is a law of chemistry that the more slowly crystals are formed the larger they become. Therefore the size of ice crystals in frozen flesh increases with the time required for freezing.

In other words, products frozen slowly will contain comparatively large ice crystals, whereas those which have been frozen with extreme rapidity will contain crystals of minute size. In the case

*Talk by Clarence Birdseye before the National Wholesale Grocers' Association at Chicago, Jan. 21, 1931.

of slow-frozen products a proportion of the crystals may grow to many times the size of the individual cells, thus disrupting the tissue.

When slow-frozen flesh foods, which have had their tissues disrupted by large ice crystals, are thawed, more or less of the juices escape and carry with them some of the soluble protein and mineral matter. Such slow-frozen products are necessarily of an unattractive appearance and more or less lacking in flavor and food value.

Slow-frozen products lose weight by shrinkage during freezing, and are usually more or less discolored, because the blood becomes oxidized through prolonged exposure to the air. Natural "bloom" is conspicuous by its absence. "Freezer-burn" is caused by a combination of desiccation and oxidation.

But if flesh is frozen with extreme rapidity, that is, if the moisture in each individual cell is congealed in minutes rather than hours, the ice crystals are not given time to build up and are so minute that they cannot damage the tissues. Such quick-frozen flesh is substantially the same as before it was frozen. There is no shrinkage; and the flavor, appearance, food value, and keeping qualities are unaltered.

What Happens When Plant Tissue Is Frozen

Animal and plant tissues are physiologically and chemically different, and do not behave similarly when quick-frozen. Animal cell walls are elastic and will not burst merely by the expansion of the cell contents during freezing.

If the cells are ruptured at all it is by the formation of large ice crystals during slow-freezing. Moreover, although there is a certain amount of coagulation of protein when animal flesh is frozen, that coagulation is largely reversible, so that when the minute fresh water ice crystals are thawed the water is re-absorbed by the tissues, which when cooked retain the moist, flavorful nature of the fresh unfrozen product.

Plant cells, on the contrary, have comparatively inelastic cellulose walls which are frequently ruptured merely by the expansion of the cell contents during freezing. Moreover, most vegetable matter contains a very large amount of intercellular moisture, and the expansion of this liquid during freezing aids in the rupture of the tissues. Apparently plant protein coagulates irreversibly during freezing and so is unable to re-absorb its moisture content when the tissue is thawed.

For these reasons frozen vegetable matter, whether quick-frozen or slow-frozen, very seldom closely resembles the fresh product. There is practically al-

ways a certain amount of cell breakage, moisture leakage, wilting, and change of flavor.

However, by proper preparation, packaging, quick-freezing, and cold storage, these forms of damage may be greatly reduced and thoroughly excellent results obtained. Indeed, the cell breakage and other effects of freezing are of actual benefit in the case of certain plant matter which is to be cooked before being eaten.

One function of cooking is to break up the cell structure and to coagulate the cell contents, and since the freezing process itself to a certain extent accomplishes these results, frozen peas, beans, asparagus, spinach, and similar vegetables need to be cooked only about half as long as fresh vegetables of the same sort.

Obviously, quick-freezing does not offer so many advantages with plant matter as with animal flesh. Nevertheless, it is extremely important and, with many products, essential. Slow freezing results in very large ice crystals and considerably greater tissue damage, leakage, and change of appearance.

With many of the more delicate fruits and vegetables, slow-freezing results in a distinct change in flavor. With bulk "cold-packed" products, such as barrelled strawberries, where freezing is necessarily very slow, additional damage is caused by the lack of uniformity in the various parts of the package, by crushing, and by organic growth in the center of the package.

In extremely quickly frozen products, on the other hand, tissue damage is reduced to a minimum and there is no increase in bacteria, moulds or other organisms at any point in the package.

It has been found that by the use of sugar, syrups, and other extraneous materials, damage during slow-freezing can be considerably lessened. Quick-freezing, on the other hand, enables the successful packaging of many delicate fruits without the addition of sugar or similar materials.

Storage Problems

But proper quick-freezing alone will not insure the delivery of a perfect product, for most perishable foods are either seasonal or must be shipped long distances before reaching the consumer. Let us consider, therefore, the problems involved in storage, transportation, and marketing.

The two most serious sources of deterioration during cold storage are desiccation and oxidation. Desiccation is due to the passage of moisture-vapor from the product through the air to the refrigerating medium. Desiccation causes serious shrinkage, ruins the appearance of the product, and adversely affects its flavor.

Oxidation during storage takes place rapidly when the product is freely exposed to the air of the storage room. The oxidase enzymes are largely responsible for oxidation, and the higher the storage room temperature and the greater the exposure of the product to air, the more rapidly oxidation takes place.

In such flesh products as oily fish and fat meats, rancidity is one of the most noticeable effects of oxidation. In lean fish, such as haddock, oxidation or enzymatic action is responsible for the development of a "salty-fishy" odor.

Because fruits and vegetables rarely contain large proportions of fats and oils, enzymatic action is usually not responsible for any rancidity of the product, but manifests itself in the shape of numerous unpleasant changes in odor and flavor.

Transportation and Marketing Problems

Even after being successfully frozen perishables must be transported long distances and put into the hands of the actual consumers. Many forms of damage may take place during these two stages of distribution.

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tribute packaged perishable foods is to make sure that they remain hard-frozen until they reach the consumer. Such foods contain within themselves a large amount of refrigeration, and if placed in well insulated shipping containers may be transported for long distances by ordinary express or parcel post.

For this purpose ordinary corrugated fiberboard containers, with the proper number of pads and liners, are well fitted. Corrugated fiberboard has about the same insulating value as sheet cork and is light, strong and inexpensive.

Satisfactory Containers

Such a container, having an aggregate wall thickness of about an inch and holding fifty one-pint cartons, costs less than twenty-five cents, including two-color printing and all labor in connection with setting up and closing. It will stand shipment by express, and if solidly full will even in hot weather keep its contents frozen for at least two days—and perfectly fresh, although partially thawed, for twice that long.

Most shipments of our quick frozen flesh products are made in carload lots by refrigerated freight, and for that purpose ordinary meat cars are fairly satisfactory.

Most vegetables and fruits, however, being less compact than meats and fish, do not contain as much refrigeration per cubic foot, and we have found that for the transportation of such products for long distances mechanically refrigerated cars are very serviceable.

The enzymatic action in frozen plant matter proceeds at lower temperatures than in animal flesh, and it is not sufficient to keep vegetables and fruits merely frozen during transportation—they apparently should be held below 10° F. for transcontinental shipment.

Recent experiments with "silica gel" and "Dry-Ice" cars have indicated that it is commercially feasible to ship quick frozen perishables from coast to coast at an average car temperature of 0° to 8° F., and to maintain the desired temperature in the product within a very narrow range—not more than two or three degrees.

Retail Store Facilities

Even after quick-frozen perishables have been delivered to the retail store, it is frequently desirable to hold them for several weeks before they are sold; and that is possible only with the aid of properly designed mechanically refrigerated low-temperature equipment.

In considering the type of equipment to be used for this purpose, it should be remembered that quick-frozen products represent a "family" of foods and will shortly be marketed in a large number of varieties and forms. Store equipment, therefore, should be capable of displaying and storing several dozen different products.

Although the leading case manufacturers have been engaged for less than two years in the development of low-temperature retail facilities, great strides have been made, and at least three manufacturers have already produced display and storage cabinets which are thoroughly practical.

These cabinets contain ample well-lighted display space, and sufficient storage room to hold about a week's supply of each of the several products. They are capable of maintaining approximately from 0° to 5° F. in both the display and storage sections.

With such facilities in his store, the retailer need fear no deterioration in properly packaged, quick frozen perishables, whether they be meats, poultry, seafoods, vegetables, fruits, or fruit juices.

Plant Location

Obviously, plants for the production of quick frozen perishables should be located at or very near the sources of supply. Meats and fish begin to deteriorate immediately after the animals have been killed; delicate berries and fruits lose their freshness shortly after they are picked, and vegetables such as peas and corn lose some of their natural sweet flavor within a few hours.

Moreover, if all the economies of packaging and quick freezing are to be realized, it is necessary that the operations be performed and the waste products eliminated before shipment has taken place. When dealing principally with plant products, it must be remembered that the season for each is likely to be short and the factories should be so located as to provide a succession of freezable products for as much of the year as possible.

It is also necessary to have in mind the fact that not all varieties of the same kind of fruit or vegetable are equally good for quick freezing. For instance, of eight varieties of peas grown in a certain locality, only two were found suitable for freezing.

In many instances the varieties best suited for canning are worthless for freezing. It is therefore necessary that a careful study of this phase of the

situation be made before quick freezing operations are undertaken on a commercial scale.

Cost of Quick-Frozen Packaged Foods

To the casual observer, it will seem inevitable that packaging and quick freezing must increase the net cost to the consumer. Such, however, is emphatically not the case, for savings in distribution, shipping and dispensing costs, as well as removal of waste portions at production points, and the almost total elimination of spoilage, more than compensate for the cost of packaging and freezing.

Consider, for instance, the case of a meal of spinach consumed at Boston in January. Under present conditions the whole spinach, containing approximately 33½ per cent of inedible stems, discolored leaves and foreign matter, must be loosely packed in baskets or crates and so placed in the car that air will circulate freely around all the packages. Thus only a comparatively small amount of edible product can be put into the car.

After arrival in the retail store, the spinach spoils very rapidly, and I am informed that this spoilage amounts to from 15 to 35 per cent in different classes of stores. Finally, after the spinach has reached the consumer's kitchen, it must be carefully picked over, the waste eliminated, and all the sand and foreign matter removed.

In contrast with the above procedure, the frozen packaged spinach is mechanically washed, all waste eliminated, and pressed compactly into rectangular cartons, which completely fill the freight car. Such a product, if properly handled under mechanical refrigeration in the retail store, is not subject to spoilage; and when delivered to the consumer need only be dumped into a saucepan of water and boiled for a few minutes before being served.

Electric Refrigeration Essential

One of the first essentials in the merchandising of frozen packaged food products is that they should be displayed and stored under mechanical refrigeration in the retail store.

The General Foods Corp. has carried on for a number of months past a large-scale sales campaign in Springfield, Mass., the purpose of which has been to test the public's acceptance of a family of quick frozen products and to work out the mechanical and merchandising problems involved in the retail distribution of such a line.

This experiment has been outstandingly successful. It has proved that people will buy quick frozen products, if they are of uniformly high quality and suitably packaged. Approximately 85 per cent of the present sales are repeats, and we are constantly receiving requests from additional stores to be allowed to carry our products. If there was at first a prejudice in the minds of the Springfield people against frozen products, that prejudice has been rapidly dissipated.

Spinach furnishes an interesting illustration of the public's acceptance of this new form of food distribution. We had large hopes of the success of many of our products, but we placed spinach on sale more to determine the point at which the public would balk, than with any hope that it would be successful. Contrary to our expectations, however, the spinach, though packaged none too skillfully, and sold at more than twice the price of the fresh product, sold better than any other item on the list.

In other words, our Springfield experiment has proved that the American housewife will try anything once, and, having found it satisfactory, will buy again—and again, and again!

HEMINGWAY CO. FREEZING VEGETABLES AT SYRACUSE

Syracuse, N. Y.—Freezing of green peas, spinach, pitted red cherries and golden bantam corn cut from the cob is being done under the Haslacher process here by H. C. Hemingway & Co., canned goods packers. During the last three years this company has been working on the preservation of vegetables by freezing.

The vegetables are frozen after being put in package form by the use of the cold blast method in temperatures from 15 to 20 degrees Fahrenheit below zero. After the products are solidly frozen, they are taken to the storage room in which the temperature ranges from 10 to 12 degrees above zero.

"We have not attempted to approach the consumer trade, excepting one or two markets where we have done a little experimental work along this line, as the retail outlets are not properly equipped to handle our products. We have consequently put our effort forth on the hotel and restaurant trade," says Mr. Hemingway.

In Detroit, the G. R. McMillan Co., 639 Woodward Ave., is handling these products, which sell under the Alpine trade name.

How to File Back Issues of the News

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Electric Refrigeration News
550 Maccabees Bldg., Detroit

LOW TEMPERATURE CABINETS APPROVED

(Concluded from Page 1, Column 5)
Products (refrigerated by a Rice methyl chloride machine).

New models are coming from Seeger, Warren, Gibson, and Servel, according to Mr. Poole.

Wall-type cabinets have been submitted by Mills, Warren, Hussman, Gibson, and Seeger.

Almost elaborate are the means by which the cases submitted are tested. Inside a fairly large room, which is well insulated, which can be heated to temperatures above 100° F., and which can be saturated with moisture (by a simple vapor-blowing device made by the American Moistening Co. of Providence, R. I.), the cases and their refrigerating machines are placed.

Each display case and wall-type cabinet is given its quota of quick-frozen meats, fish, fruits, and vegetables. In addition, recording thermometers and other testing measurements are affixed inside and out.

From the United States Weather Bureau, Messrs. Harper and Raye have obtained temperature and humidity figures, not only for sections of the country, but for scores of individual cities.

Reproduce Weather of Various Cities

On one day, for example, the weather conditions of Providence, R. I., on an August day will be reproduced. The next day the assembled low temperature cases will find themselves in the midst of the July heat and humidity found in Atlanta, Georgia. And then, for good measure, about once a week, engineer Raye runs the temperature up to 100° F., and the moisture to the saturation point.

But merely subjecting the cases to varying degrees of temperature and humidity is not by any means the only measuring stick applied to this low temperature equipment.

The doors are opened and closed as often as the average retailer (according to figures obtained in the Springfield, Mass., experiment last summer) will open and close them during a day's business. Moreover, the quantities of food in the cases are varied according to the normal fluctuations encountered in retailing.

Occasionally, too, the refrigerating machine is shut down during the night. Recording thermometers show how long it takes for the temperature in the case to rise to the thawing point, and how long it takes the machine to get the cabinet back down to sub-zero temperatures again.

Ran Tests with Power Off

This latter test demonstrates what might happen to a supply of frozen food should the refrigerating machine fail to function because of a blown fuse, a power cut-off, or an accident.

Pleasing to the manufacturers has been the fact that most of the cases submitted have held satisfactory temperatures for many hours after the machines were shut off.

Raye is on hand at all hours to check the performances of all the machines and cabinets which are undergoing the tests. Incidentally, he observes the quick-frozen foods kept in these cases, and watches their condition under all circumstances.

He makes charts, prepares reports, and collects voluminous data. He is finding out just how the various cases will react to given sets of circumstances, and how much their upkeep will cost dealers in various sections of the country.

One of the big problems manufacturers have had to contend with in building display cases which will meet these tests is that of keeping the glasses from frosting.

This problem has been answered by several solutions. One manufacturer has invented a mechanical contrivance for removing the moisture which finds its way into the air spaces between the four thicknesses of glass. Another has a scheme of vents.

Display Glasses Tightly Sealed

The most common solution has been the tight sealing of the glasses separately before being put into the case. This method requires expert workmanship, but has worked well thus far, according to Mr. Poole. One of the dangers of the tight seal is the possibility of cracking the glass when temperature changes cause "breathing" (contraction and expansion) of the glass.

Thus far plate coils seem to be in the ascendancy, according to Mr. Poole. Nearly all of the cabinets had open type coils when first submitted, Mr. Poole states, but changed to the plate type before tests proceeded very far.

Another new development evolved to meet these stringent tests has been a metal baffle board for the display compartment. This baffle board is removable and the frost which it collects can be removed quickly by scraping.

Perhaps the most significant feature of these tests is the "open mind" with which the men in charge of the Batchelder, Snyder, Dorr & Doe laboratory

Birdseye Executives Plan Big Campaign In New England Territory

(Concluded from Page 1, Column 3)
cial for several days. Birdseye direct contact quick-freezing equipment is installed in his packing house, as well as in the Batchelder, Snyder, Dorr & Doe house.

Although a limited distribution of Birdseye Frosted Foods may be initiated on the Pacific Coast in midsummer, it is practically certain that sales elsewhere will be restricted to New England, General Foods executives state.

Present indications point toward a beginning distribution of these quick-frozen packaged foods within a radius of a hundred miles of Boston. After the campaign gets well under way, new outlets may be established in outlying New England.

"We want to have the sales of these foods carried on where we can keep an eye on them," says Mr. Poole. "This thing must be carefully developed, and we want to know where all the bumps in the road are before we set out to go anywhere."

Low temperature cases will be placed in the stores selected as outlets for the frozen foods, according to the present plan. A financing arrangement is being worked out whereby the shopkeepers may eventually pay for their refrigeration equipment out of profits.

"The Springfield experiment taught us many things," maintains Mr. Poole. "Among the things we learned was how much it's going to cost to install and maintain low temperature refrigeration equipment.

"Observations in Springfield, coupled with data gathered in the tests we have been conducting all fall and winter, will enable us to tell the storekeeper just how much each type of case will cost

have greeted the designs and ideas of the various manufacturers.

Any company which wishes to submit a case for testing is first invited to send a representative to go through the laboratory and observe the conditions imposed on the equipment there.

The representative, usually a high official of the company, then returns to his home base, and works out his case design according to his own ideas.

"We're not going to handicap or stunt the individual genius scattered through these organizations by postulating specifications," declares Mr. Poole. "We want the art to be developed as rapidly as possible, and stand ready to encourage all the new ideas that are evolved."

OHIO G. E. SALESMEN FIND PROFITABLE RURAL MARKET

Canton, Ohio—Rural electrification in Ohio has opened up a fertile field for W. H. Henderson, sales manager of the Canton territory of the Willis Co., General Electric distributors. During the fall season Henderson has installed units in a number of cross roads general stores. Refrigeration enabled them to increase their business 20 or 30 per cent.

The success of the cross roads store at Rochester, Ohio, a village of 500, which in the month that the store has had electric refrigeration, has increased its customers and its profits 35 per cent. Another installation that has almost paid for itself is the G. E. unit installed in Pat Sullivan's general store at Dennison.

BOYS' SCHOOL BUYS NEW KELVINATOR-SEEGER JOB

Bridgeport, Conn.—Tucker Machine Co., Kelvinator dealer, has installed a special Seeger kitchen refrigerator of 45 cu. ft. capacity in the South Kent School for Boys, at Woodrow, Conn. The box is refrigerated by a $\frac{1}{2}$ h.p. F-10 compressor with X-5-130 coils.

A Kelvinator D-11 refrigerator has been installed in the Majestic Sandwich Shop, Fox-Poli Theatre Building, Main Street, Bridgeport, together with a Day & Night cooler with F-30 Kelvinator compressor.

RESTAURANT EQUIPPED

Springfield, Ill.—The Springfield Kelvinator Sales Co., 305 South Fourth St., has installed a special Seeger P-68 refrigerator in the Henry Moline restaurant and grocery store, 8th and Adams St. It is equipped with a X-5-100 cross fin cooling coil and a F-II heavy duty condensing unit.

A new apartment at Allen and Fourth Sts. has been equipped with Kelvinator six 5 cu. ft. Yukon refrigerators.

COPELANDS FOR BANK

Cincinnati—A. L. Fink-Electric Co., 2813 Woodburn Ave., Copeland representatives, has lately equipped the new Central Trust Bank Bldg. with two water coolers and a food storage box. Both are hooked up to one compressor.

Most Fountains Now Electric

(Concluded from Page 1, Column 2)
plete soda fountains, particularly in outlying rural districts," states Mr. Suarez. "These cabinets can be made and sold at prices with which we cannot compete.

"It's our notion that the commercial refrigeration salesman is overlooking a good bet when, in his anxiety to sell ice cream cabinets, he does not also try to promote the sale of complete soda fountains.

"There is a definite clientele for soda fountains, particularly in the cities. New models are sold every day. Yet we find we have to go out and hunt up an electric refrigeration salesman whenever we install a soda fountain.

"Rarely is an attempt made to help us sell the prospect, although the installation of a soda fountain means the purchase of a fairly large refrigerating machine."

FRIGIDAIRE INSTALLATIONS MADE IN PORTLAND, ORE.

Portland, Ore.—Among the Frigidaire commercial jobs recently installed was that at the Benson Polytechnic High School, which was equipped with an AP-60, with 570 F coil and Y compressor. The Glencoe School installed an AP-9 and the Woodstock School a D-72.

The Waverly Country Club, one of the largest golf clubs in this area, has installed Frigidaire equipment, including two AP-60's, two AP-35's, one AP-18, one 4-hole ice maker, and Y compressor and one N Compressor.

Another recent Frigidaire installation was at the Marine Grotto of Portland, which purchased an AP-60 with a 5770 Y coil.

UNIVERSAL OFFERS SELECTIVE FREEZER

(Concluded from Page 1, Column 1)
as much as he wishes in his own freezer, Mr. Larson claims. The "mix" from which the ice cream is made is kept in a compartment below the freezer. This space is maintained at approximately 35 degrees F.

This company has also developed a selective hardening cabinet alone, or it will match an upright selective hardening cabinet with a freezer and horizontal hardening cabinet, placing the freezer in the center.

Formica finishes in a variety of colors are offered for these units, with all hardware in nickel.

Calcium chloride brine circulation is used. The upright hardening cabinet has a tank surrounding the cooling space completely, except for the front.

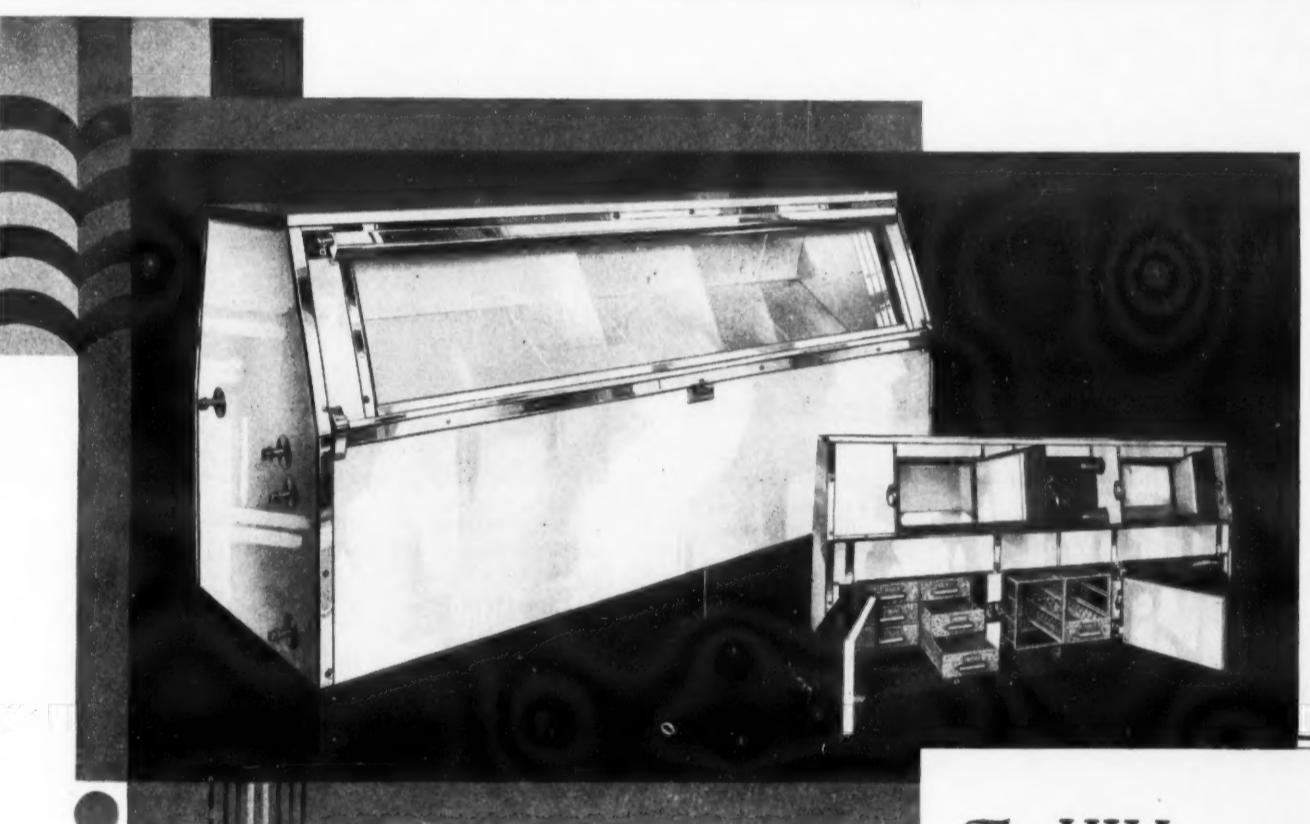
A 3-ton capacity fin-type cooling coil designed for use with either methyl chloride or ammonia, is included in the upright cabinet.

Four inches of cork-board insulation is used on all sides and the front of the cabinet, with five inches on the top and bottom.

Mr. Larson designed this new equipment. He is a soda fountain man, as well as a refrigeration engineer, having been connected with the old American Soda Fountain Co. for some time, together with J. W. Klein, president of both the Pittsburgh Refrigerator Co. and the Universal Freezer Corp.

REFRIGERATOR FOR KRESGE

Danbury, Conn.—The Danbury & Bethel Gas & Electric Co. has installed a Frigidaire unit in the new soda fountain operated in the lunch room of the S. S. Kresge Co.



Model 2000

*The HILL
Dry-Cold*

FROZEN FOODS

The Patented Dry Wall System has no equal in preserving and handling frozen food. It is now possible to serve this type of food as safely and easily as others. The new Hill case with this system meets the demand with absolute success. Defrosting is completely solved, as well as a constant Zero temperature. Ideal insulation and lighting arrangement—no fogging or sweating between the glass—composition doors that will not swell—no worry of leaks from coils.

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